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I enclose 4/6 in postage stamps as you desired & shall be much obliged if you will sent the packet down by rail. I expect to be in town very shortly & mean to Call on Mr P. Walter. or if I should fail in this I will send a post office order - -

Yours obediently

Joseph Woods

THE TOURIST'S FLORA.

83859.

THE

TOURIST'S FLORA:

A DESCRIPTIVE CATALOGUE

OF THE

FLOWERING PLANTS AND FERNS

OF

THE BRITISH ISLANDS, FRANCE, GERMANY, SWITZERLAND,
ITALY, AND THE ITALIAN ISLANDS.

BY

JOSEPH WOODS, F.A.S., F.L.S., F.G.S.

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NULLA DIES SINE LINEA.

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INTRODUCTION.

The intention of the present work is to enable the lover of botany to determine the names of any wild plants he may meet with, when journeying in the British Islands, France, Germany, Switzerland, and Italy. I have chosen these limits, as those of the countries most frequented by English tourists, and with the botany of which I was in some degree personally acquainted. To have extended them further, would have made my book more bulky, and, I am afraid, more imperfect. To accomplish this object, I had to keep in view two important particulars,—to make the descriptions clear and distinctive, and at the same time to condense the whole as much as possible, so that the work might be comprised in a single volume, of a bulk not inconvenient for the use of the traveller. The former object I have used no small pains to attain; in the first place by taking care, if by any means I could accomplish it, that my characters should always contain a *difference* at least sufficient to discriminate the plant from all others contained in this work. To this end I have been in the habit, in all the larger genera, of forming for myself an analysis of the genus; taking successively the most important characters, and dividing and subdividing upon them, till I arrived at the species. Where I could not succeed in this, I have taken each species in order, and compared it with those that follow; desirous that some character, good or bad, should serve to mark some sort of distinction. I have not found this always practicable, even in species derived from the same author; much less in those only noticed by different authors. In such cases, I have contented myself with translating the words of my author, and giving them as a quotation, with the writer's name at the end. Where the inverted commas therefore occur, they show, either that the description does not appear to point out any satisfactory distinction, or that there are parts of it which I do not fully understand, or that I do not feel confident that the plant does not occur under another name in other authors, or, lastly, that I doubt whether the plant be the one described by other authors under the same name. My reader cannot obtain from me knowledge which I do not myself possess; but I am anxious to communicate to him everything that I know myself. Where I have added the name of the author, without marking the description by inverted commas, it denotes that the description is taken from that author alone; either because he alone has described the plant as existing within my limits, or at least that his is the plant I particularly refer to, whatever discrepancy may exist between his description and that of other writers.

It will be perceived from this account that the work has no pretensions to originality. My task has been to translate and harmonize, as well as I could, the descriptions of different botanists; and I have added the result of my own observations only where it seemed to be absolutely necessary: considering that to give my own view would often have only been, to add one more to opinions already too numerous.

It will be found that I have sometimes, in these pages, used certain words in a sense not generally adopted, or at least not generally explained. When Linnæus, in the 'Philosophia Botanica,' first gave names to the forms of leaves, he seems to have had little more in view than the comparative length and breadth. Succeeding authors have modified this considerably, but without giving any distinct explanation of these modifications. I have considered them as exhibiting two series of forms. *Round*, *oval*, *oblong*, *linear*, are essentially obtuse or subobtuse; and always so to be understood, unless the contrary is expressed. *Elliptic* and *lanceolate* are in the same manner to be considered acute or subacute. The *oblong* leaf of the 'Philosophia' is a very eccentric oval; but Linnæus himself, in practice, seemed inclined to limit it to a form which exhibited some degree of parallelism on the two sides; and later writers have adopted this latter interpretation; sometimes almost without reference to the comparative length and breadth of the object. Thus Bentham, in De Candolle's 'Prodromus,' describes the seeds of Euphrasia as oblong, though the length is not much greater than the width; and Koch calls the divisions of the leaves of some species of Carduus and Cirsium oblong, where the length of the undivided portion, to which alone the term can apply, is hardly equal to the width. *Oblong*, as applied to the whole leaf, still, however, I think, indicates a length of four or five times the width (though in the figure in the 'Philosophia' it is hardly three times); and in this way I have employed it.

Elliptic has been used by botanists in two different ways. It is applied to the regular mathematical ellipsis, which I have called an oval; and to a form like the symbolical fish of the middle ages, produced by two curves, each less than the half of a circle, or of a true ellipsis, and uniting in an angle at each end. It is in this sense alone that I employ it. My first notion was to keep to the mathematical use of the term; but the difficulty of finding a suitable name for the latter form, a very common one among leaves, prevailed upon me ultimately to call the first an oval and the last an ellipsis. Linnæus describes *elliptical* or *oval* as a form whose length exceeds the breadth, " superiore et inferiore extremitate angustiore," a phrase which would at least include my *elliptic*, if it does not limit the sense to that form. Lindley says that *oval* or *elliptic* differs from *oblong* in being acute at each end. *Lanceolate* is only a narrower form of elliptic.

Thus we have, in the blunt series, *subrotund*, where the length is less than 1¼ times the breadth; *oval*, where it is from 1¼ to 4 times; *oblong*, between 4 and 8 times; *linear*, 8 or more times. I should, however, call a leaf *oblong* if the sides were distinctly parallel, even though the length were hardly twice the breadth. Linnæus, in the 'Philosophia,' has introduced the word *ligulate* or strap-shaped, but has hardly made any use of it. Perhaps it would be advantageously employed for a form between oblong and linear, restricting the former within narrower limits. In the acute series, we have only *elliptic*, from 1¼ to 3 times the breadth, and *lanceolate*, where the length is more than three times the breadth.

All these forms are further distinguished, when needful, by the addition of the terms *broad*, *exact* (*exquisitè* of Bertoloni), and *narrow*. De Candolle seems to have taken a fixed type for each form; and he designates as *compound* all deviations from it. It is, however, more convenient to admit a wide variety of proportion under each term, and to use the compound only when the form is so intermediate that we can hardly tell which word ought to be used. I will add here, that a compound epithet indicates an intermediate, and not a compound form. Thus *ovato-lanceolate* is not ovate at the bottom and lanceolate at the top, but in all parts intermediate between ovate and lanceolate. *Spatulato-* is an exception to this rule; a spatulato-ovate leaf being a spatulate leaf of which the blade is ovate. In this, I believe, I follow the usual practice, but I do not know that it is anywhere distinctly explained.

Cordate I consider as ovate with an indentation at the base. *Cordato-oblong* would therefore indicate a leaf between ovate and oblong, indented at the base; and *oblong with a cordate base*, a strictly oblong leaf with such an indentation.

Triangular has been used ambiguously, because it is not explained whether the angle at the base is included in the number. I understand by it a form nearly triangular, where the stalk is attached to one of the sides (fig. 16). Where the insertion of the stalk also forms an angle, but where the upper and lower parts of the leaf are very unequal, it becomes *deltoid*, and this is the way in which I think Linnæus used the word; though his definition will not, perhaps, bear a critical examination, and his figure in the 'Philosophia' does not represent a leaf at all corresponding with the general use of the word. *Rhomboid*, or rather *rhombic*, is where the lateral angles are nearly equally distant from the summit and base.

Thus, in fig. 16 the outline is that of a triangular leaf. The lower thinner lines *a a* would reduce it to a deltoid, and the upper *b b* to a rhombic form.

An *acute* angle, geometrically, is one which is less than a right angle. Botanically, however, the angle at *a* (fig. 17), which is a right angle, would be called *acute*. There are in this respect two particulars to be noticed, for which, perhaps, our botanical terms are hardly sufficient:—whether the object described terminate absolutely in an angle, and whether that angle be obtuse or acute. *Rounded at the end* is sometimes employed to express a form where the angle is not quite completed, and sometimes where a semicircle is formed on nearly the whole width of the leaf. I have rather avoided the term, unless where the context limits the meaning. *Attenuate*, when used alone, indicates with me a form narrowed *at the base* and somewhat prolonged, exactly corresponding with *acuminate* at the summit. *Attenuate at both ends* is attenuate and acuminate. I find sometimes a distinction between attenuate and acuminate, both as applied to the summit of a leaf; but I do not know what is meant by it; nor have I any distinct idea of what is intended by *acutatus*, a word frequently introduced by Kunth. De Candolle sometimes uses the word *acuminate* where there is no reversed curvature, and where I have employed the expression *finely acute*.

Besides these limitations of meaning in words generally adopted, I have introduced two or three not usual in botanical descriptions. One of these is *prolonged*, as applied to mark a form differing from *acuminate* by a prolongation of the upper part of the leaf without any reversed curve. Thus the shortest and bluntest form (fig. 15) I call simply *cordate*; with the little point above, it becomes *cordate, acute*; with the inner prolongation, it is *cordate, acuminate*; and with the outer, *cordate, prolonged*. In like manner, the inner thin line at the base is *cordate, attenuate*; the second would make the stalk become a *haft*; and where the membranous margin is wider, the leaf becomes *spatulato-cordate*.

The word *Haft*, used in the above sentence, I employ to denote a leaf-stalk accompanied by a membranous margin. Such a stalk is sometimes said to be winged, and sometimes is considered as making part of a spatulate leaf. Some genera, and even some natural orders, have no true leaf-stalk, and what has been usually so called is properly a haft.

Oval and *lanceolate* are forms alike, or nearly alike, at each end (*de minimis non curat botanicus*), *ovate* and *cordate* are not so; and hence the use of the words *obovate* and *obcordate* where the greatest breadth is upward. Bertoloni uses the expressions *obversely lanceolate* and *obversely oblong*, meaning apparently a lanceolate or oblong leaf, of which the widest part is a little above the middle, yet not so much so as to be called obovato-lanceolate or obovato-oblong. The reader may, perhaps, find this term preserved in descriptions taken from the 'Flora Italica.'

Another word, little if at all used by botanists, though admitted by Linnæus into the 'Philosophia,' is *parabolic*. I have applied it chiefly to the divisions of the calyx, when the somewhat curved sides and obtuse termination render the word *triangular* improper; and as these portions are not at all rounded at the base, but gradually contracted from the bottom to the top, they cannot be considered as ovate. The term *parabolic* can only be applied to objects which rise from a broad base, and not to a stalked leaf; and I may add, what I believe is not noticed in our glossaries, that the term *subulate* also implies an expanded base. Linnæus defined *subulate* as linear below and tapering above; but I believe in general it means a very narrow triangle. The leaves of *Ulex europæus* are described as subulate, though they form nearly an equilateral triangle; and if they were placed on a stalk, instead of rising from the stem on their whole width, they would be called triangular. By *setaceous* I understand a still narrower triangle, and a finer point, than is the case in *subulate.*

Acuminate is an extension of the membrane of the leaf; *mucronate,* a prolongation of the midrib beyond the membrane; *cuspidate,* a hardened extremity, arising sometimes from a combination of the nerves, sometimes from a thickening and induration of the membrane; but never a mere prolongation of the midrib. This, I believe, is consonant to the general practice where the terms are distinguished, but they are often confounded. I have adopted from Palisot de Beauvais the difference of seta and awn, as far as I could distinguish them. The latter is a prolongation of the midrib, differing from mucro only in its greater length. The former comprehends all other lengthened points, and those which, though connected with the midrib, separate from it readily.

We frequently meet with the word *Outline* in botanical descriptions, denoting the general form of a divided leaf, such as it would be if the interstices were filled up. It sometimes happens that the divisions are so far separate as readily to suggest the idea of a form produced by cutting them away. This I have called *Inline.*

Scaber and *asper* are very frequently confounded. I adopt the distinction given me by a botanical friend. The blacksmith's hand, says he, is *scaber*; his chin in the latter part of the week is *asper.*

Lineate (lineatus) seems to imply that the conspicuous veins branch from the midrib in continued parallel lines. The term is not new, but it is not common. Lindley considers it as synonymous with *striate.*

Ciliate and *fringed* are closely allied; but the first indicates a border of hairs; the latter, that the substance of the membrane is divided into narrow segments.

Pubescent seems sometimes employed to denote hairy in any way, at other times to correspond with *downy.* I understand it in the former sense.

Withering adopted the word *Cup,* as the English of calyx; I have sometimes employed it to designate the undivided part of the calyx, when too open to be called a tube.

I have used the word *Phyllaries* for the parts in the Compositæ which were considered by Linnæus as the leaves of the common calyx, and by later writers as the bracts of an involucrum; but I wanted the words *bracts* and *scales* to indicate parts external to this calyx, and the Greek word *phyllarion,* signifying a little leaf, seemed to furnish just what I wanted.

In describing the Compositæ, besides introducing the word phyllaries, I have called *Crest,* that ornament to the seeds which is named *down* by Smith, and *pappus* by Hooker; and I call the parts of which it is composed, *shafts,* which may be chaff-like, hair-like, or feathery.

Perhaps the terms *compressed* and *obcompressed,* though not introduced by me, may not be familiar to the student. Seeds are said to be compressed when the greatest diameter is in the direction of the rays, from the centre to the circumference of a compound flower; obcompressed, when the greatest diameter is at right angles to that direction. In fig. 18 the seeds are compressed; in fig. 19 obcompressed.

The word *fertile* is used in this work for flowers containing the pistil but no stamens, and producing seeds. Where from such a flower no seeds are produced, it is called *unproductive. Barren* flowers have stamens and no complete pistil. *Neutral* flowers, or florets, have neither stamens nor pistils. *Complete* flowers have all the essential parts.

Cyme has been used by modern botanists to denote two very different modes of inflorescence. One is, according to the definition given by Linnæus, an umbel whose rays are irregularly subdivided, as in Sambucus, Cornus, &c.; the other, for an arrangement which is frequent among the Caryophyllaceæ and in *Rosa,* where opposite branches spring on each side of the primordial flower, and again from the secondary flowers produced on these branches. The first is indefinite both as to the number of flowers and the order of their expansion. The second is essentially centrifugal, and the number of flowers is typically 3, 7, 15, 31, each increase being one more than the double of the preceding.

Botanists have used the word *Joint,* and its corresponding Latin word *Articulus,* as signifying the point of union of two different parts, or the space between those parts. For the first I use the term *Joining*; and when I say that a leaf is *joined* to its stalk, or the upper part of an awn or of a stem to the lower, I mean that the parts are not perfectly continuous, but exhibit a distinguishable point of junction. *Joint* is used as it is in common speech, when we talk of a *joint* of meat, &c., for the parts so joined.

I have used the word *Gusset* in the Umbellatæ, to denote the triangular filling in, in some genera, between the round kernel and its semiround covering.

When of two parts, each measured from its own extremities, the dimensions are equal, I have used that term; but it not unfrequently happens, by the position of the parts, that the shorter may extend as far, or farther, than the longer. In that case it is *equalling* or *exceeding*. Thus, in some of the Cruciferæ the blade of the petal is shorter than the sepal, which it nevertheless by its position exceeds. The labels of some of the Orchideæ will also afford examples of this sort. In the same manner I distinguish, when needful, between *shorter than* and *falling short of.*

Besides **a.** for annual, **b.** biennial, and **p.** perennial, I have employed **w.** for woody, where the plant is so small that it would not in common speech be called a shrub, although the substance indicates such a nature. The genus *Helianthemum* offers abundant examples to explain my meaning. **s.S.** is small shrub, **l.S.** large shrub, **s.T.** small tree, **l.T.** large tree: terms which I think will be sufficiently intelligible, without fixing on any precise number of feet, which, in a character so variable as size, is more likely to mislead than assist the inquirer.

In the localities given, there are also one or two peculiarities, independent of the abbreviations. By *Shore*, without any addition, I mean the sea-shore, the part more or less influenced by the salt atmosphere; by *Coast*, a large extent of country, affected by the more even temperature of the sea, but not by its salt. I use the name of the river for the valley drained by it. I leave out the words *place*, *soil*, &c., as easily supplied by the reader, who will find that in many other cases I have omitted words necessary to make the sentences flow freely, where there can be no difficulty in supplying them. Thus, *cult.* means cultivated ground; and I have used *uncult.*, not for heaths and districts entirely in a state of nature, but for fallows, hedge-banks, waysides, and such places, where previous or neighbouring cultivation has fitted the ground for the reception of seed. *Alps* and *alpine* are applied exclusively to the high range extending on the north of Italy and into Germany, and not figuratively to other high mountains; unless, for want of some other appropriate name, I may in one or two instances have retained Bertoloni's name of Apuan Alps, for the range of mountains between the valley of the Serchio, and Massa and Carrara.

De Candolle made use of a note of admiration to his synonyms, to indicate that he had himself seen the specimen which authorized the name. With me it denotes a remarkable character, not met with in the allied species, or at least to be considered as not existing among them, unless where expressly mentioned.

The characters of the natural orders are so little definite, that it is almost impossible for the student to determine a plant by them; and some writers have therefore thought it necessary to give a *clavis analytica* to assist his researches. I have thought the Linnæan system the best *clavis analytica*, and on this account

I have followed it in the arrangement of the genera, and have in that part been more full than is usual where the species are arranged according to the natural orders. After he has determined the genus, the student will find a direct reference to the species it contains, and I have headed my pages in a manner to make that reference as easy as possible. I here, however, subjoin a slight sketch of De Candolle's arrangement.

According to this author, the Vegetable World is separated into two large divisions. In the first, the structure of the plants is partly made up of vessels or pipes; while in the second it is formed entirely of cells. These divisions nearly coincide with the Phanerogamy and Cryptogamy of the Linnæan system: except that the Ferns and Miscellaneæ of that system find their place in the first division of De Candolle.

This first division, which is all I have to do with in the present work, comprises three classes, Dicotyledonous, Monocotyledonous, and Cryptogamous.

Dicotyledonous plants, besides the character drawn from the seed, which is not always accessible, are distinguished by the branching and anastomosing veins of the leaves, and by the parts of the flower being four or five, or some multiple of these numbers. In woody plants they are more certainly marked by the structure of the trunk, which is composed of concentric layers, a new layer being added on the outside of the woody centre each year.

Monocotyledonous plants, on the contrary, have simple nerves, extending from one end of the leaf to the other, without branching into veins. The parts of the flower are threes or multiples of three; and in the larger and more permanent trunks, the growth takes place internally, and the section exhibits no concentric layers.

The Ferns and Miscellaneæ have no flowers.

These rules are subject to many exceptions. *Berberis*, *Leontice*, *Loranthus*, *Frankenia*, *Peplus*, and *Rumex*, have six stamens. The Cruciferæ have also six stamens, though only four petals. Several plants of different families have only a midrib, and there are consequently no anastomosing veins. In *Lathyrus Nissolia* the apparent leaf is very much like that of a grass.

On the other hand, among monocotyledonous plants, *Maianthemum*, and the European species of *Paris*, have four petals and as many stamens. *Arum*, *Calla*, *Smilax*, *Tamus*, *Ruscus*, *Paris*, have anastomosing veins. *Hydrocharis* and the Alismaceæ have two sets of nerves, or veins, crossing each other; one set proceeding from the base of the leaf, and the other from the midrib. In the Potameæ something of a similar structure may be observed; the principal nerves being united or crossed by veins nearly at right angles. I am not aware that this arrangement is observable in any dicotyledonous plant.

The Dicotyledons are divided by De Candolle into *Thalamifloræ*, *Calycifloræ*, *Corollifloræ*, and *Monochlamydeæ*. In the first, the stamens are inserted upon a receptacle which also supports the petals and the fruit. The sepals, if there are any, and the petals, are always separate and inferior.

In the *Calyciflorœ* the character is not so simple. The stamens are placed on the calyx, or on a ring which seems to support the calyx and the petals (which are always separate), and is quite detached from the fruit; or the germen is inferior or half inferior, and the corolla polypetalous; or the germen is inferior and the corolla monopetalous. The *Compositœ* are placed, I think, rather arbitrarily, in this division, for the stamens grow upon what is the only covering of a superior flower. If, indeed, we should admit the pappus, or crest, as a representative of the calyx, the coloured part would be acknowledged by all botanists to be a corolla, and the plants would belong to the *Corolliflorœ*; and if we do not admit the crest to be calyx, the order would rather belong to the Monochlamydeæ. The *Campanulaceœ*, *Vacciniœ*, *Ericineœ*, and *Monotropeœ*, seem also forced into this class, since the stamens rise from within the corolla. The corolla being monopetalous will, however, easily distinguish them from the *Thalamiflorœ*; and the stamens being independent of the corolla, from the *Corolliflorœ*.

The *Corolliflorœ* have the stamens growing on the corolla, which is monopetalous; and there seems to be no exception to this rule, unless among the *Plumbagineœ* and *Plantagineœ*; and it was probably from the anomalous structure of these tribes that De Candolle was induced to place them among the *Monochlamydeœ*, though pointedly contradicting the character of this tribe.

The *Monochlamydeœ* do not include all dicotyledonous flowers which have only a single perianth. Several species, and even some genera, of the preceding orders, want a corolla, others want a calyx; and if, in compliance with the phraseology of many modern botanists, we call it a calyx where there is only one covering, this does not help us to determine whether the plant in question is monochlamydeous or not; nor can I point out to the student any way of obtaining this knowledge otherwise than by acquiring a familiarity with vegetable forms, and a degree of tact which will point out the probable relations of the one before him.

ABBREVIATIONS IN THE DESCRIPTIVE PARTS.

a.	Annual.
Aut.	Autumn.
b.	Biennial.
Cal.	Calyx.
Caps.	Capsule.
Carp.	Carpophore.
Cor.	Corolla.
Diam.	Diameter.
Div.	Divisions.
Fil.	Filament.
Fl.	Flower.
Flt.	Floret.
Fr.	Fruit.
Germ.	Germen.
Invol.	Involucrum.
L.	Leaf or Leaves.
Leg.	Legume.
l.S.	Large Shrub.
Lt.	Leafit or leaflet.
l.T.	Large Tree.
nat.	Naturalized.
Nect.	Nectary.
p.	Perennial.
Pan.	Panicle.
Pet.	Petal.
Phyll.	Phyllaries.
Pr.	Prickles.
Pub.	Pubescence.
R.	Root.
Rac.	Raceme.
Rec., Recept.	Receptacle.
Rhiz.	Rhizoma.
S.	Seed.
S.	Shrub.
s.S.	Small Shrub.
s.T.	Small Tree.
Segm.	Segment.
Sep.	Sepal.
Sp.	Species.
Sta.	Stamens.
Stip.	Stipules.
T.	Tooth or Teeth.
T.	Tree.
Term.	Termination.
Umb.	Umbel.
V.	Valve.
w.	Woody.

The numerals after the mark of duration indicate the times of flowering.

LOCALITIES.

Calc.	Calcareous.
Cult.	Cultivated land.
Fds.	Fields.
Grav.	Gravelly soil.
Hgs.	Hedges.
High	means high in position.
Hths.	Heaths.
mar.	Maritime situations.
Mns.	Mountains.
Mws.	Meadows.
Pres. or Past.	Pastures.
rich.	Places of a rich soil.
Thts.	Thickets.
uncult.	Uncultivated land among cultivation.
Vyds.	Vineyards.

GEOGRAPHICAL NOTICES.

Abr. Abruzzi.

adr. Adriatic: applied as an adjective to those parts of Germany and Italy which border on that sea.

Agde or S. Agatha. A town on the Mediterranean, in Languedoc.

Agrig. Agrigentum. The modern Girgenti.

Alba-longa. Opposite the modern town of Albano, on the lake of that name.

Albula. A mountain of the Grisons, separating the waters of the Inn from those of the Rhine.

Algau. A district in Swabia.

Alps, Apuan. A name given by Bertoloni to the mountains of Massa and Carrara. They consist chiefly of mica slate and of marble.

Alps, Cottian. Separating Dauphiné from Piedmont.

Alps, Julian. To the east and north of Trieste.

Alps, maritime. Separating Provence and the county of Nice from Piedmont.

Alps, Pennine. Separating Piedmont from Savoy, and from the Vallais. Mont Blanc and Monte Rosa belong to this range.

Alps, Rhætian. In the country of the Grisons.

Alps, Venetian. The range from the Lake of Garda, behind the ancient territory of Venice, and separating its waters from those of the Adige and of the Drave.

Als. Alsace.

Amiternum. An ancient town in the Abruzzi, near the modern Aquila.

Apenn. Apennines.

Apulia. A district on the Adriatic, comprehending the present Terra di Bari, and part of the Capitanata.

Aspramonte, near Nice.

Aust. Austria.

Auv. Auvergne.

Avezzano. In the Abruzzi.

Baldo. A high, and, botanically, very rich mountain, between the Lago di Garda and the Adige.

Belg. Belgium.

Boh. Bohemia.

Bord. Bordeaux.

Br. Britain.

Br. Isles. British Islands.

Britt. Brittany.

Brioni. An island near Fiume.

Bur., Burg. Burgundy.

C. Cape.

c. Central.

Cal. Calabria.

Carn. Carniola.

Capraja or Caprария. An island nearly half way between Corsica and Piombino.

Carin. Carinthia.

Carr. Carrara.

Cat. Catania.

Ceresole. Mountains or hills near Mantua.

Cev., Cevennes. A range of mountains north of Montpellier.

Corbières. Limestone hills near Narbonne.

Corni di Canzo. Two points in the Fork of the Lake of Como.

Cornu (Monte), or the Gran Sasso. The highest mountain in the Abruzzi, and reckoned to be 9,000 feet high.

Cor. or Cors. Corsica.

Cumray. Two islands in the Firth of Clyde.

Dau. Dauphiné.

Dax. Formerly Aquæ Tarbellicæ.

Dertona. Now Tortona in Piedmont.

e., alone, is put for eastern.

Eifel. The German part of the ancient Forest of Ardennes.

Eng. England.

Etrechy. A small town on the railroad from Paris to Orleans.

Eug. Hills. Euganean Hills: a small range south of Padua.

Eur. Europe.

F., Fr. France.

Fiume. A city belonging apparently rather to Hungary than to Germany, but its Flora is included by Koch in that of Germany.

Flor. Florence.

Franc. Franconia.

Friuli. Forum Julii, in the N. E. of Italy.

The same Latin name also belonged to the town now called Fréjus, in the S. E. of France.

Fusaro. A lake near Naples, said to be the ancient Acheron.

G. or Ger. Germany.

Garg. Gargano: a hilly, down-like promontory on the Adriatic side of the Kingdom of Naples.

Gasc. Gascony.

Gemmi. A Swiss mountain between the Oberland of Berne and the Vallais.

Gen. Genoa.

Gorgona. A small island about thirty miles from Leghorn.

Grimsel. A Swiss mountain separating the waters of the Aar and Rhone.

Guadagnolo. A small town situated high up among the hills to the E. of Tivoli.

H. Holland; *i. e.*, the present kingdom.

Halle. There are four towns of this name: one in Thuringia (Saxony), one in the Tyrol, one in Würtemberg, and one in Belgium.

Hallstadt. A town in Austria proper, on a lake of the same name, buried among high mountains.

Han. Hanover.

Heiligen Blut. A convent high up on the Great Glockner.

Hols. Holstein.

Ir. Ireland.

Is. Isola or Island.

Ist., Istr. Istria.

It. Italy.

Jap. Japygia, or Terra di Otranto: the S. E. extremity of Italy.

Joux. A village and small lake in the Pays de Vaud, amongst the ridges of the Jura.

Juvenal (Port) at Montpellier. The point to which the wool from Barbary and the Levant is brought, to furnish the manufactures of Montpellier.

K. Nap. Kingdom of Naples.

La Ciodad. A small town S.E. of Marseille.

Lampedusa. A small island S. of Malta.

Lang. Languedoc.

Laus. Lausanne.

Lig. Liguria, the Genoese territory.

Lomb. Lombardy.

Lorr. Lorraine.

l. Sax. Lower Saxony.

Luc. Lucania: a large district extending between the Bays of Salerno and Policastro to the Gulf of Tarento.

Mad. Madonie: calcareous mountains in Sicily; anciently Nebrodes.

Majella. A mountain in Abruzzi, S. of Sulmona, and between the sources of the Sangro and Pescara. Estimated height, 8,500 feet.

Maretimo. An island on the W. of Sicily.

Marschlins. A town in the Grisons, not far from where the torrent Landquart falls into the Rhine.

Mars. Marseille.

mdt. Mediterranean; generally used as an adjective.

Mil. Territory of Milan.

Miseno. A promontory near Naples.

Mt., Mte. Mount, Mont, Monte, Montagna.

Mte. Cornu, or the Gran Sasso, 9,000 feet. The highest mountain in the Abruzzi.

Mte. de' Fiori. On the borders of Umbria and the Abruzzi; about 6,000 feet high.

Mont Louis. A town in the Eastern Pyrenees.

Montagne della Sibilla, in Umbria. Monte Vettore, the highest point, is reckoned to be 7,000 feet above the sea.

Monte di St. Angelo. Near Naples.

Montigno. Among the Apennines of Camerata.

Mor. Moravia.

Mtp. Montpellier.

n. North or northern.

Nap. Naples, *i. e.*, near the city.

Narb. Narbonne.

Nebr. Nebrodes. See Madonie.

Nicolaithal. A valley descending from Monte Rosa and the Matterhorn to the Vallais.

Norderney. An island on the N. of Germany, not far from Embden.

Novarese. The district of the town of Novara between Turin and Milan.

Osero. An island in the Gulf of Fiume.

Pal. Palermo.

Palat. The Palatinate of the Rhine.

Pdm. Piedmont.

Penn. Alps. See Alps.

Peregrino. A limestone hill near Palermo.

Pic. Picardy.

Picenum. A district on the Adriatic, stretching S. from Ancona.

Plelan. A town in Brittany surrounded by forests.

Pom. Pomerania.

Prov. Provence.

Pyr. Pyrenees.

Raefel. A mountain in the Vallais.

Reg. Reggio, or Rhegium.

Rhine. I use the name of the river to indicate the valley in which it flows from Basle to Cologne.

Rhone. I use this in like manner for its valley from Fort l'Ecluse to Arles.

Rieseng. Riesengebirge, or Sudetes.

Rio Sacro. Near Camerino, between Foligno and Loreto.

Rous. Rousillon: now the department of the E. Pyrenees.

s. South or southern.

S. Lucie. A peninsular salt marsh near Narbonne.

S. Michele. A town on the west of Sicily.

S. Victoire. A mountain in Provence.

Salève. A high limestone hill near Geneva.

Salzb. Salzburg.

Samnium. The ancient territory of the Samnites, on the frontiers of the Roman and Neapolitan States.

Sard. Sardinia.

Sasso Grande. See Monte Cornu.

Sav. Savoy.

Sax. Saxony.

Sc. Scotland.

Scaphusia. Schaffhausen.

Serini. Mountains near Lago Nero in Lucania.

Shet. Shetland Islands.

Sic. Sicily.

Sil. Silesia.

Sol. La Sologne; a low, barren, sandy district on the S. of the Loire.

Sorricinium. Near Carcassonne.

Sty. Styria.

Sud. Sudetes or Riesengebirge, between Bohemia and Silesia.

Sw. Switzerland.

Sylva Sacra. A sandy tract, mostly woody or bushy, on shore of the Mediterranean, S. of Rome.

Syr. Syracuse.

Tavolara. An island on the N.E. coast of Sardinia.

Tess. The Canton of Tessin or Ticino in Switzerland, on the S. side of the central ridge of the Alps.

Thur. Thuringia.

Tiv. Tivoli.

Tyr. Tyrol.

Umbria. I apply this name to the mountainous district, within the Roman States, N.W. of the Abruzzi.

Val. Valley.

Vall. Vallais.

Valt. Valtelline: the valley of the Adda above the lake of Como.

Vaizelay. A town in the department of the Yonne, on the upper part of that river.

Veglia. An island in the Gulf of Fiume.

Ventous. A calcareous mountain about 6,000 feet high, N.E. of Avignon.

Ver. Verona.

Vettore. The highest point of the mountains of the Sybil.

Viesti. A town at the foot of Mte. Gargano.

Vigan (Le). A town at the foot of the Cevennes.

Vosges. A range of mountains in Alsace. The main ridge is granitic.

w. West or western.

Westph. Westphalia.

Zermatten. A town in the Nicolaithal.

Zweibrücken. Also called Deuxponts.

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GENERA.

I. MONANDRIA.

I. MONOGYNIA.

774. **CANNA.** Cal. 3-leaved. Cor. 6-partite, erect. Anther adnate to the margin of a petal-like filament. Cannaceæ. Scitamineæ of Linn. p. 356.

234. **HIPPURIS.** Cal. a slight border. Cor. 0. Nectary inferior, naked. Stigma 1. *Upright aquatic plants, with whorled L., and naked axillary flowers.* Halorageæ. p. 127.

693. **SALICORNIA.** Cal. tumid, undivided. Cor. 0. Stamens 1 or 2. Seed 1, invested with the calyx. *Succulent plants, mostly jointed, and without L.* Chenopodieæ; included in the Holoraceæ of Linn. p. 315.

755. **ZOSTERA.** Fl. in two rows, on a Spadix included in a long sheath, formed in the base of the L. No Cal. or Cor. Stigmas 2. Drupe 1-seeded. *Long, slender, floating herbs, with very long, flat, attenuate L.* Potameæ.
The class to which this genus belongs seems uncertain, as there is no absolute connection between the anther and germen. Hooker placed it in *Monœcia.* p. 349.

II. DIGYNIA.

233. **CALLITRICHE.** Cal. 0. Pet. 2, inferior, sometimes wanting. Seeds 4, compressed, bordered. Fl. not all complete. *Floating plants. Fl. small, axillary. L. opposite.* Halorageæ. p. 126.

691. **CORISPERMUM.** Cal. 0. Pet. 2. Seed 1. *Annual plants, somewhat rigid, with undivided L., and inconspicuous, axillary flowers. There are sometimes* 2 *or* 3 *stamens.* Chenopodieæ. p. 315.

374. **CENTRANTHUS.** Cal. superior, with an entire, involute border. Cor. of 1 petal, 5-lobed, spurred. Seed with a feathery crest. *L. opposite, glaucous.* Valerianeæ. p. 169.

692. **BLITUM.** Cal. 3-cleft. Pet. 0. Cal. swelling into a berry and investing the single seed. Chenopodieæ. p. 315.

914. **PSILURUS.** Glumes 1 or 2, minute. Spicules 1-flowered, imbedded in a rachis. Pales of equal length, the outer with a terminal seta. Gramina. p. 420.

II. DIANDRIA.

I. MONOGYNIA.

A. *Flowers inferior, monopetalous, regular* (*wanting in* Fraxinus 1, 2). *Shrubs, or Trees, with opposite L.* Jasmineæ.

536. **JASMINUM.** Cor. salver-shaped; border 5–8-parted. Berry with 2 knobs and 2 cells. Seeds solitary, with an arillus. *Slender, flexible Shrubs. L. compound. Stalks many-flowered.* p. 244.

535. **LIGUSTRUM.** Cor. 4-cleft. Berry with 2 membranous, 1–2-seeded cells. *Branches round. L. undivided. Fl. white, in terminal panicles.* p. 244.

534. **PHILLYREA.** Cor. 4-cleft. Berry with 2 brittle, 1-seeded cells, one of them generally abortive. *L. undivided. Fl. greenish, clustered, axillary.* p. 244.

533. **OLEA.** Cor. 4-cleft. Drupe with a stony nut and 1–2 seeds. L. undivided. *Fl. in axillary racemes.* p. 244.

537. **SYRINGA.** Cor. 4-cleft. Caps. 2-celled. Valves boat-like. *L. undivided. Fl. in opposite panicles.* p. 244.

539. **FRAXINUS.** Cor. 0 or 4-partite. Caps. compressed, winged, with 1 or 2 seeds. Some Fl. imperfect. *Trees, or large Shrubs, with pinnate L., except in a var. of* F. excelsior. p. 244.

B. *Fl. inferior, monopetalous, irregular. Caps.* 2-*celled.* SCROPHULARIACEÆ. PERSONATÆ of Linn.

603. **VERONICA.** Cor. rotate, 4-cleft; the lowest Div. smaller. Caps. compressed, 2-celled. *Herbaceous or woody. L. entire or indented, not compound, opposite.* p. 267.

602. **PÆDEROTA.** Cor. ringent, spurless: mouth naked. Sta. longer than corolla. *Herbaceous. L. opposite. Fl. in terminal racemes.* p. 267.

600. **WULFENIA.** Cor. ringent, spurless: mouth bearded. Fil. very short. *Herbaceous. L. undivided. Fl. in terminal racemes.* p. 267.

595. **GRATIOLA.** Cor. slightly ringent, resupinate. Fil. 4, 2 of them barren. *Marsh-loving Herbs, with opposite L. and solitary, stalked, axillary Fl. Cal.* 5-*parted, and with* 2 *bracts.* p. 266.

C. *Fl. inferior, monopetalous, irregular. Seed-vessel of* 1 *cell.* LENTIBULARIÆ. CORYDALES of Linn.

659. **PINGUICULA.** Cor. ringent, spurred. Cal. 5-cleft, without bracts. *Bog plants. Stem* 0. *L. entire: the margin rolled inwards.* p. 298.

660. **UTRICULARIA.** Cor. ringent, spurred. Cal. 2-leaved. *L. finely divided. Plant floating by means of bladders on the stem or L.* p. 298.

D. *Fl. inferior, monopetalous, irregular. Seeds* 4, *separate. Stems square. L. opposite. Fl. in whorls.* LABIATÆ. VERTICILLATÆ of Linn.

624. **LYCOPUS.** Cor. nearly regular. Sta. simple, distant. Cal. 5-cleft. Throat hairless. Seeds retuse. *Fl. small, numerous, sessile.* p. 284.

627. **ZIZIPHORA.** Cor. 2-lipped; upper reflexed, lower trifid, spreading. Cal. striate, with 5 teeth: mouth bearded. *Small Herbs, resembling* Thymus. p. 286.

626. **ROSMARINUS.** Upper Lip of Cor. deeply divided. Fil. with a tooth at base! Cal. 2-lipped: upper entire; lower bifid. *Aromatic Shrubs, with a terminal whorled spike of Fl.* p. 286.

625. **SALVIA.** Cor. ringent. Fil. on a lateral stalk or connective. Cal. nearly campanulate. *Fl. in spikes, or racemes, composed of whorled Fl.* p. 284.

E. *Petals* 2.

538. **FONTANESIA.** Cal. 4-parted, inferior. Pet. bipartite. Caps. with 2 cells and 2 seeds, not opening. *Habit of* Phillyrea. *Fr. approaches that of* Fraxinus. JASMINEÆ. p. 244.

230. **CIRCÆA.** Cal. 2-leaved, superior. Pet. cloven. Caps. with 2 cells and 2 seeds. *L. opposite, undivided. Fr. covered with hooked prickles.* ONAGRARIÆ. p. 126.

F. *Petals* 0.

236. **SUFFRENIA.** Cal. 4-cleft, with 4 small, intermediate teeth. Cor. 0. Caps. 2-celled, many-seeded. LYTHRARIÆ. p. 127.

757. **LEMNA.** Cal. a skinny, lacerate sheath. Cor. 0. Caps. with 1 seed. *Plant a simple or proliferous floating frond. Fl. from a cleft in the margin.* LEMNACEÆ. p. 349.

827. **CLADIUM.** Glumes skinny, sheathing; the outer ones empty. Drupe without bristles. *Polished, rush-like Stems, with harsh, cutting L.* CYPERACEÆ. p. 381.

Salicornia. Rhyncospora alba. Lepidium ruderale.

II. DIGYNIA. GRAMINA.

865. **COLEANTHUS.** Fl. naked. Upper Pale awned; lower cloven, pointless, with 2 rough nerves. p. 400.

852. **ANTHOXANTHUM.** Glumes 2, containing 1 perfect Fl. of 2 minute, awnless pales, and 2 larger outer valves, each of which is awned, being the rudiments of 2 barren Flts. *A sweet-smelling Grass. Pan. spike-like, one-sided at base.* p. 397.

Hierochloe. Crypsis aculeata.

III. TRIANDRIA.

I. MONOGYNIA.

A. *Cal. superior. Segm. of Cor. fewer than 6. Cells of Fr. 1–3. Seeds solitary, dicotyledonous.* VALERIANEÆ.

375. **VALERIANA.** Cor. 5-cleft, unequal at base. Cal. expanding into a feathery crest to the single seed. *Perennial plants. Stems round. L. smooth, opposite. Fl. terminal.* p. 169.

373. **FEDIA.** Cor. 5-cleft, gibbous at base. Caps. 1–3-celled, crowned with the erect teeth of the calyx. *Annuals. Stem dichotomous. L. opposite.* p. 168.

B. *Cal. superior, 3-cleft. Cor. 0. Fr. a dry, one-seeded drupe.* SANTALACEÆ.

706. **OSYRIS.** Sta. very short. Stigmas 3. Fl. somewhat polygamous. *Shrubby, with slender, rod-like branches.* p. 323.

C. *Cal. 0. Cor. superior, with 6 segments. Cells of Fr. 3, many-seeded. Seeds monocotyledonous.* IRIDEÆ.

775. **CROCUS.** Cor. regular. Segm. close together. Tube longer than the border. Stigmas 3, dilated upwards, plaited or lobed. *Stalk none. Bulb coated externally, the new one placed on the old. L. long, narrow.* p. 357.

776. **ROMULEA.** Cor. regular, open. Tube shorter than the border. Fil. downy. Stigmas 3, bipartite. Segm. linear. *Fl. stalked. Bulb coated.* p. 357.

777. **GLADIOLUS.** Cor. tubular, 2-lipped. Segm. undulate, unequal. Stigma trifid. Seeds with an arillus. *Root a coated bulb. L. ensiform, sheathing.* p. 358.

778. **IRIS.** Segm. of Cor. unequal, alternately reflexed. Stigmas 3, petal-like, covering the stamens, 2-lipped; the lower lip very small. *L. mostly ensiform, equitant. Root fleshy, creeping, perennial.* p. 358.

D. *Fl. inferior, not glumaceous.*

161. **CNEORUM.** Cal. 3–4-toothed. Pet. 3–4, equal. Sta. 3–4. Drupe with 3–4 knobs. *Shrubby. L. alternate, without stipules.* TEREBINTHACEÆ. TRICOCCÆ of Linn. p. 75.

115. **ORTEGIA.** Cal. of 5 L. Cor. 0. Caps. 3-valved at the summit, with 1 cell and many seeds. *Herbaceous. L. opposite, with very small stipules.* CARYOPHYLLACEÆ. p. 53.

255. **LŒFLINGIA.** Cal. 5-parted: Div. with 2 teeth at base. Pet. 5, small, connivent. Caps. with 3 valves, 1 cell, and many seeds. PARONYCHIEÆ. p. 131.

690. **POLYCNEMUM.** Bracts 2–3. Cal. deeply 5-parted. Cor. 0. Sta. 2–5. Style

cloven. Seed 1. Chenopodieæ. *Herbaceous. Fl. small, sessile, axillary. L. subulate,* somewhat 3-edged. p. 314.

Atriplex. Amaranthus.

754. **CAULINIA.** Cal. 0. Cor. 0. Fil. dilated, persistent, bearing the Anthers at the base externally. Fr. a 1-seeded berry. Potameæ. p. 348.

E. *Fl. inferior, glumaceous, of a single scale; covering, not in itself including, the organs. Seed* 1. *Plants grass-like, but not exhibiting knots on the stem.* Cyperaceæ.

825. **CYPERUS.** Spikelets many-flowered. Scales in 2 rows, alike, not crowded, nearly all fertile. *Seeds without bristles.* p. 379.

826. **SCHŒNUS.** Spikelets 1–3-flowered. Scales in 2 rows, crowded; outer smaller and empty. Style without joinings, deciduous. p. 380.

828. **RHYNCHOSPORA.** Spikelets few-flowered. Scales tiled all round; outer smaller and empty. Style bifid, with an expanded, persistent base. Seed with bristles at base. p. 381.

830. **SCIRPUS.** Scales tiled all round, alike, or the lowest rather larger, nearly all fertile. Germen tipped with the filiform base of style. p. 381.

831. **FIMBRISTYLIS.** Scales tiled all round; lower larger, 1 or 2 of them barren. Style compressed, ciliate; base enlarged, with a joining to the ovary. p. 383.

829. **BLYSMUS.** Spikelets in 2 rows. Scales tiled; outer larger and empty. Style persistent, not enlarged at base. p. 381.

832. **POGONOSTYLIS.** Scales tiled all round. Style enlarged and jointed at base, fringed. Base of Style furnished with a long beard. p. 383.

833. **ERIOPHORUM.** Scales tiled all round. Style simple, deciduous. Seed surrounded with long, silky hairs. p. 383.

F. *Fl. of Glumes or Pales enveloping the organs. Seed* 1, *naked, superior. Stem jointed, with a sheathing L. at each joint.* Gramina.

855. **LYGEUM.** Flts. 2–3, in a convolute sheath. Glumes 0. Base of the Pales hardening into a 2-celled seed-vessel. p. 398.

913. **NARDUS.** Glume 0. Pales 2, terminating in a bristle, rigid, slender. Fl. in a simple, unilateral, 2-rowed spike. p. 420.

912. **ECHINARIA.** Spikelets sessile, in a head tiled all round. Flts. 1 or 2, the second generally barren. Outer Pale herbaceo-coriaceous, ending in several long, rigid setas. *Head with a laciniate involucrum.* p. 420.

II. DIGYNIA. Gramina (*see above*).

A. Monandrous. *Psilurus.*

B. Diandrous. *Coleanthus. Anthoxanthum.*

C. In Triandria Monogynia. *Nardus. Lygeum. Echinaria.*

D. In Triandria Digynia.

- **i.** Spikelets in opposite rows, on an alternately channeled rachis.
  - **a.** Spikelets of 2 or more Flts., all, or nearly all, perfect.
  - **b.** Spikelets all fertile, but with only 1 perfect Flt.
  - **c.** Spikelets in threes, the lateral usually barren; none with more than one perfect Flt.
- **ii.** Spikelets not on such a rachis, one-flowered, with additional scales!
  - **a.** Spikelets in twos, sessile and stalked; the latter barren.
  - **b.** Spikelets in sets, sessile and stalked; all fertile, placed in two rows on one side of a flattened rachis.

c. Spikelets all fertile, in a compound spike, tiled all round, and furnished with a bristle-like involucrum.

d. Spikelets in sets, all fertile, one sessile, and one or two stalked; enveloped in long silky hairs!

e. Spikelets all fertile, scattered, not enveloped in hairs, or surrounded by an involucrum.

iii. Spikelets one- or more flowered, without additional exterior scales (which are likewise wanting in the following sections), placed in two rows on one side of a flattened rachis.

iv. Spikelets sessile, two- or more flowered, in a head or spike, tiled all round.

v. Spikelets scattered, one- or more flowered. Flts. enveloped in silky hairs.

vi. Spikelets scattered, one-flowered, without glumes!

vii. Spikelets scattered, in a spike-like panicle or head. Glumes one-flowered.

viii. Spikelets scattered, in a loose panicle. Glumes one-flowered.

ix. Spikelets scattered, in a loose panicle, with a second imperfect Flt.

x. Spikelets scattered, with more than one perfect Flt.

a. Glume nearly, or quite, equalling spikelet.

b. Glume decidedly shorter than spikelet.

E. In Hexandria Digynia. *Oryza.*

F. In Monœcia Triandria. *Coix. Zea.* The former is said to be naturalized near Palermo, and the latter is extensively cultivated in s. Europe.

i. *Spikelets in opposite rows, on an alternately channeled rachis.*

a. *Spikelets with two or more flowers, all perfect.*

906. **LOLIUM.** Spikelets placed edgewise on the rachis! Lower Glume very obscure or wanting. p. 417.

905. **BRACHYPODIUM.** Glumes unequal, ribbed, much smaller than the outer pale. Spikelets on short stalks, *more widely separated than is usual in* Triticum. p. 417.

907. **TRITICUM.** Glumes nearly equal, opposite, broad, embracing the solitary spikelet. Pale terminating rather abruptly, and generally with a point or seta. p. 418.

908. **SECALE.** Glumes narrow. Spikelets solitary. Pale gradually tapering into a long seta. Seed crested. p. 419.

909. **ÆGILOPS.** Glumes placed rather obliquely; these and the outer pale herbaceo-coriaceous, turgid, terminating in several stout setas. p. 419.

910. **ELYMUS.** Spikelets 2 or 3 together. Glumes on one side. p. 419.

885. **GAUDINIA.** Glumes unequal, much shorter than spikelet. Outer Pale with a geniculate and twisted dorsal awn. Rachis brittle. p. 406.

b. *Spikelets all fertile, with only one perfect Flt., placed edgewise to the rachis, and when closed imbedded in it, so as to form a continuous cylinder or prism.*

915. **LEPTURUS.** Glumes 1 or 2 on the same side of the unarmed spikelet, which contains one perfect Flt. and an interior rudiment. p. 420.

c. *Spikelets in threes: the lateral usually barren, stalked; none with more than one perfect Flt.*

911. **HORDEUM.** Glumes setaceo-aristate, both on one side of the spikelet. A superior Rudiment in each Spikelet towards the rachis. p. 420.

Elymus europæus. Sclerochloa Triticum and divaricata.

ii. *Spikelets one-flowered, with additional scales; the rudiments of one or more exterior Flts.*

[In *Andropogon*, *Saccharum*, *Erianthus*, and *Imperata*, from the delicacy of the parts, it is often very difficult to distinguish the additional rudiment, but these may be known from all other European Grasses not included in the preceding section by the spikelets in twos or threes, and one of them sessile.]

a. *Spikelets in twos, sessile and stalked; the latter barren.*

841. **SORGHUM.** Spikelets oblong or rather ovoid. Glumes of fertile Fl. coriaceous, without striæ. Seed large, roundish. p. 395.

840. **ANDROPOGON.** Spikelets lineari-lanceolate. Seed nearly linear. *In the European species of this genus, except in* A. Gryllus *and* A. Allionii, *the Fl. are in fingered spikes.* p. 395.

b. *Spikelets all fertile, sessile and stalked, in two rows, on one side of a flattened rachis.*

842. **DIGITARIA.** Spikes fingered. Spikelets unarmed. Seed invested with the hardened pales. p. 396.

844. **OPLISMENUS.** Spikes in racemes or panicles. Spikelets naked. Glumes keeled, plaited, or setigerous. p. 396.

c. *Spikelets all fertile, in a compound spike, tiled all round, with a bristle-like involucrum.*

845. **SETARIA.** Spikelets accompanied by setiform bracts. p. 396.

846. **PENNISETUM.** Spikelets accompanied by bracts, some of which are feathery. p. 397.

d. *Spikelets all fertile, disposed in sets, one sessile and one or two stalked, enveloped in long silky hairs.*

837. **SACCHARUM.** Awnless. Squamules 2. Pales without hairs; inner minute or wanting. Pan. not spike-like. p. 395.

839. **ERIANTHUS.** Lower Pale of fertile Flt. awned. Squamules 2. Sta. 2–3. Pan. spreading. p. 395.

838. **IMPERATA.** Awnless. Squamule 0. Pan. spike-like. p. 395.

e. *Spikelets all fertile, scattered, not enveloped in hairs.*

851. **PHALARIS.** Additional Scales short, unarmed. Glumes boat-like, keeled, inclosing Pales, coriaceous, hardening on seed. p. 397.

850. **EHRHARTA.** Glumes membranous, unarmed, not inclosing the pales. Barren Flts. 2, coriaceous, transversely wrinkled, inclosing papery pales. p. 397.

843. **PANICUM.** Barren Flt. 1, large, glume-like, embracing the horny, ribless pale. Glumes not inclosing. p. 396.

iii. *Spikelets one- or more flowered, without additional external scales, sessile or nearly so, in two rows on one side of a flattened rachis.*

[In this and all the following divisions, all the spikelets are perfect, except in *Lappago,* where the uppermost of each short spike are barren or neuter, and in *Cynosurus,* where the barren spikelets form a sort of involucrum.]

875. **CYNODON.** Spikelets 1-flowered, with an interior rudiment. Spikes fingered. Glumes unequal, membranous. Pales membranous; outer broad, embracing the inner. Seed invested with the hardened pales. p. 402.

876. **DACTYLOCTENIUM.** Spikelets 2- or more flowered. Spikes fingered. Inner Glume mucronate. Pales unequal: the outer ventricose, membranous; inner scariose. p. 402.

878. **LEPTOCHLOA.** Spikelets 2- or more flowered. Spikes in a raceme. Glumes keeled. Outer Pale keeled, 3-nerved. Awn straight. p. 402.

877. **BECKMANNIA.** Spikes in a raceme. Spikelets unarmed, 1–2-flowered. Glumes

equal, deeply boat-shaped, enlarging towards the apex, very obtuse. Pales 2, included; the outer beaked. Seed loose. p. 402.

879. **SPARTINA.** Spikes compound. Spikelets 1-flowered. Glumes very unequal; the inner acuminate. Styles united for half their length. Nect. 0. p. 402.

895. **OREOCHLOA.** Spikelets many-flowered, in a simple spike or head. Glumes and outer Pale concave, membranous, with a scariose margin. p. 408.

Knappia minima. Triticum Nardus and unilaterale. Festuca maritima and divaricata. Sclerochloa loliacea.

iv. *Spikelets sessile, two- or more flowered, in a head or spike, tiled all round.*

894. **SESLERIA.** Outer Pale membrano-scariose, ending in 3–5 soft, flexible teeth. Stigmas long. Styles united below. p. 408.

v. *Spikelets scattered, one- or more flowered. The Flts. enveloped in long silky hairs.*

871. **ARUNDO.** Glumes membranous, equal, or the outer largest. Pales membranous. Awn, if any, fine and slender. Pan. spreading. p. 401.

872. **AMMOPHILA.** Spikelets 1-flowered, with an interior rudiment. Glumes nearly equal, membrano-scariose. Outer Pale membranous, with a short, strong point below the apex. p. 402.

873. **PHRAGMITES.** Spikelets many-flowered; the lowermost imperfect and not enveloped in hairs. Glumes membranous; the outer much the smallest. Pales scariose, unarmed. p. 402.

874. **AMPELODESMOS.** Spikelets many-flowered; the lowermost perfect, unless where the Glume is changed into an imperfect Flt. Outer Glume rather the smallest. Pale with a subapicular awn. Seed crested! Pan. diffuse. p. 402.

vi. *Spikelets scattered, one-flowered, without glumes.*

848. **LEERSIA.** Pales ribbed, herbaceo-membranous, of equal length, nearly valvular; outer boat-shaped, unarmed. *Pan. lax.* p. 397.

vii. *Spikelets scattered, one-flowered, in a spike-like panicle or head.*

856. **ACHNODONTON.** Spikelets spindle-shaped. Glumes equal, boat-like, unarmed, including. Outer Pale unarmed, embracing the inner of equal length. p. 398.

857. **PHLEUM.** Spikelets oblong. Glumes nearly equal, setigerous, parallel on the keel, including 2 unarmed pales. p. 398.

858. **ALOPECURUS.** Glumes equal, unarmed, *usually united at base!* Pale 1, shorter than glume; *the margins in some species united below!* Awn dorsal. p. 398.

859. **CRYPSIS.** Head or Spike included in most species in a common involucrum. Glumes membranous, unarmed. Pales 2, entire, membranous, unarmed, as long as glumes. *C. aculeata* has only 2 stamens; *C. alopecuroides* a naked spike. p. 399.

860. **GASTRIDIUM.** Glumes ventricose at base, including pales, scariose. p. 399.

882. **LAGURUS.** Glumes scariose, ending in a long, fringed seta. Outer Pale quite smooth, ending in 2 setas and an intermediate, geniculate and twisted, dorsal awn. p. 404.

847. **LAPPAGO.** Outer Glume scariose; inner coriaceous and prickly. p. 397.

Polypogon monspeliensis and maritimus.

viii. *Spikelets one-flowered, scattered in a loose panicle.*

864. **VILFA.** Glumes membranous, unequal, not exceeding pale. Pale membranous, unarmed. p. 400.

863. **AGROSTIS.** Glumes membranous, including. Pales unequal, smooth, not hardening on the seed. Awn, if any, slender, dorsal. p. 399.

866. **KNAPPIA.** Pale scariose, shaggy, truncate; the inner minute or wanting. Spikelets in a raceme, obscurely 2-rowed. Rachis cylindrical. *Seed loose, with longitudinal dotted lines.* p. 401.

861. **POLYPOGON.** Glumes emarginate, each furnished with a long, slender seta, scariose, including pales. Pales scariose; the outer with a dorsal awn. p. 399.

862. **MILIUM.** Glumes herbaceo-scariose. Pales membrano-coriaceous, nearly equal, unarmed, hardening on the seed. p. 399.

867. **PIPTATHERUM.** Glumes membranous. Flts. sessile. Pales subcoriaceous, joined to a straight, terminal awn, hardening on the seed. p. 401.

869. **ARISTIDA.** Glumes unequal, membranous, very narrow. Outer Pale coriaceous, involute, with 3 awns; *inner wanting in the Sicilian species.* Pales including the free seed. p. 401.

868. **STIPA.** Glumes scariose, herbaceous at base. Flts. stalked. Pales coriaceous, hardening on the seed. *A geniculate and twisted* Awn joined at or near to its extremity. p. 401.

870. **ACHNATHERUM.** Glumes scariose, herbaceous at base. Pale membranous. Awn geniculate and twisted, with a distinct, though slightly marked joining on to the outer pale, at which it readily breaks off. p. 401.

ix. *Spikelets in a loose panicle, with a second imperfect Flt.*

887. **HOLCUS.** Lower Flt. perfect, unarmed; upper awned, generally barren. p. 406.

886. **ARRHENATHERUM.** Lower Flt. barren, with a geniculate awn; upper perfect, with a short straight awn. p. 406.

853. **HIEROCHLOA.** Two outer Flts. barren, triandrous; middle perfect, diandrous, all unarmed. p. 397.

Melica uniflora.

x. *Spikelets scattered, with more than one perfect Flt.*

[Among these genera, *Aira*, *Deschampsia*, *Danthonia*, and *Avena*, are mostly awned, the awn easily breaking away from the Pale; and these are never furnished with a seta forming a mere continuation of the midrib. In *Trisetum* and *Kœleria* it is difficult to decide whether we find an awn or a seta. *Dactylis*, *Bromus*, and *Cynosurus* are setigerous; *Festuca* often so; and we sometimes find a small mucro on the outer pale of *Sesleria*. The other genera are unarmed.]

a. *Glumes nearly or quite as long as the spikelet.*

880. **AIRA.** Glumes 2-flowered, without rudiment. Awn, if any, dorsal, geniculate and twisted. *The Pales in some species harden on the seed, but without adhering to it. Pan. equal, shining.* p. 403.

881. **DESCHAMPSIA.** Glumes 2-flowered, with usually, the not club-like rudiment of a third. Outer Pale truncate, with a straight Awn from near the base, surrounded by soft hairs. p. 403.

891. **MELICA.** Glumes nearly equal, larger than pales; 1- or 2-flowered, with the stalked, club-like rudiment of 1 or 2 more. Pales unarmed, membranous, hardening on the seed. p. 407.

888. **DANTHONIA.** Glumes 2- or more flowered. Outer Pale smooth and coriaceous below, membranous and nerved above, emarginate, with an intermediate, broad tooth, *which sometimes terminates in a geniculate and twisted awn.* p. 406.

890. **SCHISMUS.** Glumes many-flowered, much larger than pales, membranous, ribbed, with a scariose margin. Outer Pale similar, rounded at the end, except for a terminal notch. *P. de B. mentions a terminal seta.* p. 407.

889. **KŒLERIA.** Glumes and outer Pale herbaceo-scariose; the latter entire, acuminate, or with a terminal or subterminal, not geniculate seta. Spikelets ovate. Pan. often spike-like, somewhat one-sided. Seed loose. p. 407.

883. **TRISETUM.** Glumes and outer Pale keeled, membrano-scariose, without prominent nerves; the latter ending in 2 teeth, and with a slender dorsal awn, which in most species is geniculate. Seed without furrow or crest. p. 404.

884. **AVENA.** Glumes herbaceous or membranous, with a scariose margin. Outer Pale firmer than glume, ribbed, ending in 2 points, with an intermediate geniculate and twisted dorsal awn. Seed furrowed and crested. p. 404.

b. *Glumes decidedly falling short of the spikelet.*

896. **POA.** Glumes nearly equal. Outer Pale compressed, keeled, membranous, with a scariose margin, entire, rather acute, unarmed. *Pan. one-sided in* nemoralis, compressa, *and* annua; *equal in the others. In* P. divaricata *the glumes are very unequal.* p. 408.

897. **ERAGROSTIS.** Glumes and outer Pale similar, membrano-scariose throughout, with 3, prominent, converging nerves. p. 410.

898. **GLYCERIA.** Glumes and outer Pale membrano-herbaceous, with sharply prominent nerves, and a scariose margin. p. 411.

899. **SCLEROCHLOA.** Glumes and outer Pale membranous, with rounded, often obscure ribs, which disappear towards the base. Flts. cylindrical at base, *keeled in some species at top,* unarmed, or with a minute and hardly distinguishable mucro. p. 411.

893. **CATABROSA.** Glumes and outer Pale membranous at base, both eroso-truncate; the latter with 3 ribs ending in as many teeth, which are united by the scariose margin. p. 408.

900. **BRIZA.** Glumes nearly equal, broad, boat-shaped, obtuse. Outer Pale boat-like, heart-shaped, ventricose, keelless, unarmed, *adhering to seed.* p. 412.

892. **MOLINIA.** Glumes 2–3-flowered, with a subulate rudiment. Pales acute, both entire, membranous, firmer than glume, and hardening on the seed. p. 408.

901. **CYNOSURUS.** Spikelets attached to a neutral spicule or spike. Fertile Spikelets 1- or more flowered. Glumes scariose, keeled. Outer Pale concave, keeled, with a terminal seta. *Pan. one-sided.* p. 412.

902. **DACTYLIS.** Glumes unequal, many-flowered, acute, herbaceous, with a terminal seta, compressed, and keeled. *Spikelets crowded. Pan. one-sided.* p. 412.

903. **FESTUCA.** Glumes unequal, many-flowered, thinner than the pale. Pale ribbed, rounded on the back; very acute, or with a terminal, or very nearly terminal, seta. *Pan. one-sided, except in* F. gigantea. p. 412.

904. **BROMUS.** Glumes unequal, many-flowered. Outer Pale ribbed, with a dorsal seta. Inner with 2 ciliate ribs. *Pan. equal.* p. 415.

I have given in the order Gramina a different and more natural arrangement of the genera, hoping that the student who experienced difficulties in the one, might find his account in the other.

III. TRIGYNIA.

247. **MONTIA.** Cal. of 2 L. Cor. of 1 petal. Caps. 1-celled, 3-valved, 3-seeded. (Sta. 3–5. Style 1.—DC.) *L. opposite, somewhat succulent.* Portulacaceæ. p. 129.

122. **HOLOSTEUM.** Cal. 5-leaved. Pet. 5, jagged. Fil. thread-like. Caps. 1-celled, splitting at top into 6 teeth, many-seeded. *L. opposite, quite entire. Has the habit of* Cerastium. Caryophyllaceæ. p. 56.

253. **POLYCARPON.** Cal. 5-leaved, concave, keeled. Pet. 5, nearly entire. Fil. subulate. Caps. 3-valved, 1-celled, many-seeded. L. opposite or in fours. (*Styles 2, very short.*—DC.) *Two of the three European species are pentandrous.* Paronychieæ. p. 131.

Tillæa. Eriocaulon.

IV. TETRANDRIA.

I. MONOGYNIA.

A. *Fl. of* 1 *petal, inferior. Seed* 1. GLOBULARIEÆ.

675. **GLOBULARIA.** Invol. tiled. Cal. tubular. Sta. inserted in tube of corolla. *Fl. in a head, blue.* p. 303.

B. *Fl. of* 1 *petal, superior. Seed* 1. *Cal. double. Fl. in a head.* (The covering of the Seed is sometimes considered as an inferior calyx. Its border forms what is here called the outer Cal.) DIPSACEÆ. AGGREGATÆ of Linn.

376. **DIPSACUS.** Invol. of many L.: the outer exceeding the inner. Recept. chaffy. Outer Cal. a thickened margin; inner a cup without awns or setas. *Plant rough. L. opposite, often combined. Chaff* long and somewhat pungent. p. 170.

377. **CEPHALARIA.** Invol. tiled; the outer falling short of the inner. Rec. chaffy. Outer Cal. with bristle-like teeth. Inner a denticulate cup. *Chaff soft and blunt.* p. 170.

378. **KNAUTIA.** Invol. of many L. Rec. hirsute, not chaffy. Outer Cal. with sharp teeth; inner with 8–16 subulato-setaceous teeth. p. 171.

380. **SCABIOSA.** Invol. of many L. Recept. chaffy. Outer Cal. with 8 depressions, and a scariose, plaited margin; inner of 5 rough, simple setas. *In* S. pauciseta *these setas are more or less deficient.* p. 171.

379. **PTEROCEPHALUS.** Invol. of 2 rows. Recept. chaffy. Outer Cal. with 8 pits and a short, scariose margin; inner of about 10 feathery setas. p. 171.

C. *Fl. of* 1 *petal, superior. Seeds* 2, *separate. L. simple, in whorls,* (*except in* Putoria.)

372. **RUBIA.** Cor. campanulate. Fr. of 2 roundish berries, not crowned. p. 168.

370. **VALANTIA.** Cor. campanulate. Fl. in threes; the central perfect, 4-cleft; lateral barren, 3-cleft. Calyces at length united at the base, and becoming horny. p. 167.

369. **GALIUM.** Cor. rotate. Fr. dry, not crowned. p. 164.

368. **ASPERULA.** Cor. tubular. Fr. dry, not crowned. p. 163.

366. **PUTORIA.** Cor. funnel-shaped. Berry dicoccous, crowned with the calyx. *Woody. L. opposite. Fl. in terminal clusters.* p. 163.

367. **SHERARDIA.** Cor. funnel-shaped. Fr. dry, crowned with the calyx. *Fl. terminal. Habit of* Galium. p. 163.

371. **CRUCIANELLA.** Tube of Cor. filiform, with claw to the border. Cal. of 2 L. Seeds linear. p. 167.

D. *Fl. of one petal, inferior. Seeds more than one, in a simple seed-vessel.*

789. **MAIANTHEMUM.** Cal. 0. Cor. 4-partite, rotate. Fr. a berry of 2 or 3 cells and as many seeds. ASPARAGEÆ. p. 363.

555. **CICENDIA.** Cor. funnel-shaped. Caps. imperfectly 2-celled, splitting at the top. Seeds many, immersed in the placentas. Anthers not twisting. Stigma cloven. *Smooth, bitter Herbs, with simple, entire, opposite L.* GENTIANEÆ. p. 249.

664. **CENTUNCULUS.** Cor. tubular, including the smooth stamens. Caps. globose, 1-celled, circumsciss. *A minute plant, with alternate L. and inconspicuous Fl.* PRIMULACEÆ. p. 299.

680. **PLANTAGO.** Cor. bent back. Sta. very long. Caps. 2–4-celled, circumsciss. *Fl. in spikes, each with a bract.* PLANTAGINEÆ. p. 309.

Gentiana 4.

E. *Petals* 4.

238. **AMMANNIA.** Cal. of 1 L., plaited, 8-toothed, inferior, bearing the corolla. *An aquatic plant, with entire, opposite L.* Lythrariæ. p. 127.

24. **EPIMEDIUM.** Cal. 4-leaved, deciduous, inferior. An inflated Nect. on each petal. Fr. a pod, of 1 cell and many seeds. *Perennial. L. compound.* Berberideæ. Corydales of Linn. p. 11.

359. **CORNUS.** Nect. 0. Drupe inferior. Nut 2-celled, or rarely 3-celled. One Seed in each cell. *L. simple, entire, opposite. Fl. subumbellate.* Corneæ. p. 162.

231. **TRAPA.** Nut inferior. Cal. 4-cleft; the Segm. on the fruit hardening into horns, often unequal. *A floating plant.* Onagrariæ. p. 126.

F. *Petals* 0.

229. **ISNARDIA.** Cal. campanulate, 4-cleft, permanent, superior. Caps. with 4 angles, 4 cells, and many seeds. *Some non-European species have petals. Ours is a procumbent plant, in habit and place of growth not much unlike* Peplis portula. Onagrariæ. p. 126.

707. **ELÆAGNUS.** Cal. coloured, 4-cleft. Tube slender: border companulate. Cal. becoming fleshy, and forming a one-sided drupe. *Shrubby.* Elæagneæ. p. 323.

721. **PARIETARIA.** Cal. 4-cleft, inferior. Some Fl. barren. Stamens elastic. Seed of the perfect Fl. covered with the lengthened calyx. Cal. of the fertile Fl. unaltered. *L. entire, alternate.* Urticeæ. p. 330.

216. **SANGUISORBA.** Cal. 4-cleft, coloured, superior, with scales at the base. Caps. with 4 angles and 1 cell, not splitting. Seeds 1 or 2. *Fl. in a dense head. The Caps. seems formed from the hardened tube of the calyx.* Rosaceæ. p. 121.

215. **ALCHEMILLA.** Cal. inferior, 8-cleft: the segments alternately smaller. Seeds 1 or 2, clothed with the permanent calyx. *Herbs, with alternate, stalked, lobed, or fingered L.* Rosaceæ. p. 120.

689. **CAMPHOROSMA.** Cal. inferior, deeply 4-cleft, bladder-like; 2 opposite segments very small. Seed 1. *Woody, much branched, with numerous small, subulate L.* Chenopodieæ. Holoraceæ of Linn. p. 314.

II. DIGYNIA. Papaveraceæ. Corydales of Linn.

31. **HYPECOUM.** Cal. inferior, 2-leaved. Pet. 4: outer broader; inner trifid. Pod jointed, with a seed in each joint. *Tender annual plants, with divided L.* p. 12.

Alchemilla occasionally, *Gentianæ*, *Cuscutæ*.

III. TETRAGYNIA.

116. **BUFFONIA.** Cal. of 4 sepals. Pet. 4, entire. Caps. 2-valved, 1-celled, 2-seeded. *Slender plants, with opposite filiform L.* Caryophyllaceæ. p. 53.

155. **ILEX.** Cal. with 4 teeth. Cor. rotate, in 4 divisions, sometimes quite separate. Style 0. Berry with 4 seeds. Celastrineæ. p. 73.

124. **SAGINA.** Cal. of 4 L. Pet. 4, shorter than calyx. Caps. with 1 cell, 4 valves, and many seeds. *Very small Herbs, with opposite L.* Caryophyllaceæ. p. 57.

130. **RADIOLA.** Cal. of 12 parts. Pet. 4. Caps. superior, of 8 cells and 8 valves. Seeds solitary. *Very small annual plants. L. opposite.* Lineæ. Gruinales of Linn. p. 61.

256. **TILLÆA.** Cal. 3–4-parted. Pet. 3–5. Caps. 3–4, 2-seeded. *Minute fleshy annuals, much branched. L. sessile, opposite.* Crassulaceæ. p. 131.

257. **BULLIARDA.** Cal. 4-cleft. Pet. 4. A linear scale at the base of each germen. Caps. 4, many-seeded. *Minute fleshy Annuals, somewhat aquatic. L. sessile, opposite.* Crassulaceæ. p. 131.

750. **POTAMOGETON.** Cal. 0. Pet. 4. Style 0. Seeds 4, sessile. Herbs floating or immersed, except the spiked inflorescence. *The seeds ripen under water.* POTAMEÆ. p. 346.

751. **RUPPIA.** Cal. 0. Pet. 0. Seed 4, stalked. *The Fl. are in pairs, included in the sheathing base of the L. The Seeds are fertilized within the sheaths, and afterwards are raised above water to be ripened.* POTAMEÆ. p. 348.

Mœnchia erecta, Mœhringia muscosa and sedifolia, Cerastium tetrandrum and atrovirens.

V. PENTANDRIA.

I. MONOGYNIA.

A. Fl. inferior, of 1 petal, bearing the stamens. Seeds 4.
  i. Germens 2, each of 2 cells and 2 seeds.
  ii. Germens at first united, afterwards separating into four.
  iii. Germens 4, always distinct.
    a. Seeds attached to the style.
    b. Seeds attached to a receptacle, not excavated at base.
    c. Seeds excavated at base.
B. Fl. inferior, of 1 petal, bearing the stamens. Fr. a capsule or berry. Seeds more than 4.
  i. Seeds on a central receptacle, in a single cell.
    a. Fr. a dry capsule.
    b. Fr. pulpy.
  ii. Caps. of 1 cell. Seeds on 2 parietal receptacles.
  iii. Caps. of 1 cell. Seeds on margin of valves.
  iv. Fr. a capsule of 2–4 cells.
  v. Fr. a berry with 2 cells.
  vi. Fr. of 2 follicles.
C. Fl. of 1 petal, inferior. Pet. 1. Sta. on a receptacle.
D. Fl. of 1 petal, superior.
  i. Caps. of 1 cell.
  ii. Caps. of 2–5 cells.
  iii. Fr. a berry of 2–3 cells.
E. Fl. of 4–5 petals, inferior.
  i. Fl. regular. Pet. equal. Sta. on a disc forming the base of the calyx.
  ii. Fl. regular. Pet. free at base. Sta. on receptacle.
  iii. Fl. irregular; lower Pet. spurred.
F. Fl. of 5 petals, superior.
G. Fl. with a single perianth.

A. *Fl. inferior, of one stamen-bearing petal. Germens* 4 (except *in Cerinthe*, which has only 2, and *in Heliotropium*, where they are at first united). *Flowers circinate in the bud. Seeds* 4. *L. alternate.* BORRAGINEÆ. ASPERIFOLIÆ of Linn.

i. *Germens 2, each with 2 cells and 2 seeds.*

561. **CERINTHE.** Cor. ventricose; mouth naked. *The L. are usually sprinkled with pale, callous dots.* p. 251.

ii. *Germen 1, afterwards splitting into 4 seeds.*

562. **HELIOTROPIUM.** Cor. salver-shaped. Mouth with 5, small, intermediate teeth. *Fl. in secund spikes.* p. 252.

iii. *Germens 4, each producing 1 seed.*

a. *Seeds attached to the style.*

563. **ASPERUGO.** Cor. funnel-shaped: the mouth closed with conical valves. Cal. irregular, at length compressed, and covering the fruit. p. 252.

564. **CYNOGLOSSUM.** Cor. funnel-shaped: the mouth closed with concave valves. Cal. regular, 5-parted, not compressed. Margin of Fr. thick, obtuse. *Smell unpleasant in most species. Cor. of a dirty purple or bluish.* p. 252.

565. **OMPHALODES.** Cor. rotate: the mouth closed with valves. Cal. regular, 5-parted. Margin of Fr. thin and membranous. *Fl. blue or white.* p. 252.

566. **ECHINOSPERMUM.** Cor. salver-shaped. Seeds 3-edged, prickly on margin. *Fl. blue. Habit of Myosotis.* p. 253.

b. *Seeds attached to a receptacle; base not excavated.*

567. **MYOSOTIS.** Cor. salver-shaped: mouth closed with vaulted processes. Seeds convex in front, keeled behind, not prickly. *Fl. blue or white.* p. 253.

568. **ERITRICHUM.** Cor. salver-shaped: mouth closed. Seeds flat in front and with a raised margin. *Fl. blue.* p. 253.

569. **LITHOSPERMUM.** Cal. 5-parted. Cor. not closed (*but in some species not entirely without protuberances*), regular, funnel- or salver-shaped. Fr. a stony nut. p. 254.

570. **STEINHAMMERA.** Cal. 5-parted. Cor. campanulate, with minute protuberances on the throat. Fr. rather fleshy. p. 255.

571. **PULMONARIA.** Cal. 5-cleft, campanulate in the fruit and somewhat prismatic. Cor. funnel-shaped: mouth naked. Fr. not fleshy. *Distinguished from* Lithospermum *by its broad L. and different habit, as much as by the artificial character.* p. 255.

572. **ECHIUM.** Cal. 5-parted. Cor. funnel-shaped: throat dilated, naked; margin oblique, unequally 5-lobed. *L. linear.* p. 255.

573. **ONOSMA.** Cal. 5-parted. Cor. tubuloso-campanulate, regular: throat naked. *Plant hispid.* p. 256.

c. *Seeds attached to a receptacle; base excavated.*

574. **NONNEA.** Cor. funnel-shaped: throat somewhat contracted, but not closed. p. 256.

575. **SYMPHYTUM.** Cor. campanulate: mouth closed with subulate valves. p. 256.

576. **ANCHUSA.** Cor. funnel-shaped: tube straight; throat closed with vaulted protuberances. p. 256.

577. **LYCOPSIS.** Cor. funnel-shaped: tube crooked; throat closed with concave valves. p. 257.

578. **BORRAGO.** Cor. rotate: mouth closed with obtuse, emarginate valves. Seeds wrinkled. *Fl. bright blue, occasionally white.* p. 257.

B. *Fl. of 1 petal, inferior; bearing the stamens. Seeds more than 4.*

i. *Fr. of 1 cell. Seeds on a central receptacle.*

a. *Fruit a dry capsule.* PRIMULACEÆ.

662. **LYSIMACHIA.** Cor. rotate. Stigma obtuse. Caps. globose, with 5 or 10 valves, opening at top. *L. mostly opposite.* L. Linum-stellatum *has a somewhat tubular corolla.* p. 299.

663. **ANAGALLIS.** Cor. rotate. Caps. circumsciss! L. opposite, or more rarely in whorls. p. 299.

665. **CORIS.** Caps. 1-celled, with 5 valves and 5 seeds. Cor. ringent. Cal. ventricose; the teeth prickly at base. *Fl. pink or lilac, in a dense, terminal, spike-like raceme.* p. 299.

666. **ANDROSACE.** Cor. salver-shaped: tube contracted at the mouth. Caps. with 5 valves and 5 or more seeds. p. 299.

667. **GREGORIA.** Cor. salver-shaped: tube cylindrical; throat furnished with short processes. Caps. with 5 valves and 5 ovules, of which only 2 or 3 ripen. *Stem much branched. L. linear.* p. 300.

668. **PRIMULA.** Cal. 5-cleft. Cor. salver-shaped: tube cylindrical. Stigma globose. Caps. with 5 valves opening with 10 teeth. Seeds many. *Stemless Herbs.* p. 301.

669. **CORTUSA.** Cor. rotate, crowned with a raised ring! Anthers at base of the border. Caps. opening with 5 teeth, many-seeded. *Stemless Herbs. Fl. in a simple umbel.* p. 302.

670. **SOLDANELLA.** Cor. campanulate, divided into many segments! Caps. with 5–6 valves, and 10 or 12 teeth. *Stemless Herbs.* p. 302.

672. **HOTTONIA.** Cal. 5-parted. Cor. salver-shaped: tube short, the Stamens in the divisions. Stigma globose. Caps. terminated by the persistent style. *Aquatic plants, with finely divided L.* p. 303.

b. *Fruit pulpy.*

671. **CYCLAMEN.** Cor. rotate: Segm. reflexed! Anthers sessile at base of tube. Stigma acute. Caps. opening with five teeth. Seeds many. *Fl. solitary. Fr.-stalk rolled up after flowering, so as almost to bury the capsule. Stemless Herbs. Root a large tuber, producing many L. and Fl.* PRIMULACEÆ. p. 303.

583. **MANDRAGORA.** Fr. a berry. Seeds on a pulpy receptacle, occupying the whole berry. No Stem. *In habit somewhat resembling* Primula vulgaris. SOLANACEÆ. p. 258.

ii. *Fruit of* 1 *cell. Seeds on* 2 *parietal receptacles.* SOLANACEÆ.

584. **RAMONDIA.** Fr. a capsule. Cor. rotate. Anthers approximate, perforated at top. *Stemless.* p. 258.

iii. *Fruit of* 1 *cell. Seeds on margin of valves.* GENTIANEÆ.

548. **MENYANTHES.** Germen on an hypogynous disc. Cor. funnel-shaped: Segm. hairy within. *Aquatic plants, with compound L.* p. 246.

549. **VILLARSIA.** Germen with 5 glands at base. Cor. rotate: border fringed (*in the European species*). *L. broad, entire, floating.* p. 246.

iv. *Fr. a capsule of* 2–4 *cells.*

554. **ERYTHRÆA.** Cal. 5-cleft. Cor. salver-shaped. Anthers spiral in decay. Caps. incompletely 2-celled. Seeds many, attached to margin of valves. *Annual. Stem square. Stem-L. opposite.* GENTIANEÆ. p. 248.

556. **POLEMONIUM.** Cor. rotate: mouth closed with 5 valves, bearing the stamens. Caps. of 3 cells, separating at the axis. Seeds many. *Erect plants, with pinnate L.* POLEMONIACEÆ. p. 249.

557. **CONVOLVULUS.** Cal. 5-parted. Cor. campanulate, plicate, not deeply divided. Stigmas 2. Seeds 2. *L. alternate. Stems procumbent, or twisting from right to left.* CONVOLVULACEÆ. p. 249.

558. **IPOMÆA.** Stigma undivided. Seeds many. *Otherwise as* Convolvulus, *of which it has the habit.* CONVOLVULACEÆ. p. 250.

585. **NICOTIANA.** Cal. 5-cleft. Cor. salver-shaped: border regular. Caps. 2-celled, 4-valved at top. Seeds many, attached by a connective to the receptacles. *Tall, showy plants. Tobacco.* SOLANACEÆ. LURIDÆ of Linn., *as are the eight following genera.* p. 258.

586. **DATURA.** Cal. tubular, 5-celled, caducous. Cor. funnel-shaped, plicate, 5-lobed. Caps. *prickly*, imperfectly 4-celled, with a central receptacle in each cell, springing from dissepiment. *Cor. very large, white.* SOLANACEÆ. p. 259.

587. **HYOSCYAMUS.** Cor. funnel-shaped: border oblique, with unequal lobes. Caps. 2-celled, opening transversely near the top by a convex lid. *Downy plants, with a disagreeable smell.* SOLANACEÆ. p. 259.

588. **SCOPOLINA.** Cor. campanulate, 5-lobed. Caps. opening transversely at base. *Rare plants* of Styria and Carn. SOLANACEÆ. p. 259.

589. **VERBASCUM.** Cor. rotate, somewhat irregular. Sta. bent down, unequal. Caps. 2-celled. Seeds many, attached to a central receptacle. *Fl. in terminal spikes or racemes, yellow, sometimes with a purple stain at the base, rarely white; purple in* V. phœniceum, *brown in one or two hybrids.* SOLANACEÆ. p. 259.

v. *Fr. a berry with* 2 *cells.* SOLANACEÆ.

579. **LYCIUM.** Cor. funnel-shaped. Fil. bearded at base. Stigma peltate, with a transverse furrow. Cal. of Fr. small. *Shrubs, more or less spinescent.* p. 257.

580. **SOLANUM.** Cor. rotate: segments reflexed. Anthers connivent, opening with 2 pores at the extremity. *Stems branched, leafy.* p. 258.

581. **PHYSALIS.** Cal. large, inflated, concealing the berry! Cor. campanulato-rotate. Anthers connivent. p. 258.

582. **ATROPA.** Cor. campanulate, on a short tube. Sta. diverging, incurved. *Fl. solitary, dingy purple.* p. 258.

vi. *Fr. of* 2 *follicles.* APOCYNEÆ.

541. **VINCA.** Cor. salver-shaped: segments oblique. Follicles erect. Seeds beardless. *Stems trailing. L. opposite, entire.* p. 245.

540. **NERIUM.** Cor. funnel-shaped, with a lacerated crown. Follicles connivent, with a lengthened point. Anthers terminating in a thread. Seeds bearded. *A splendid Shrub. L. opposite or in threes, lanceolate, quite entire.* p. 245.

C. *Fl inferior, of* 1 *petal. Sta. on receptacle.*

676. **PLUMBAGO.** Seed 1. Cor. funnel-shaped: Sta. dilated at base. Stigma 5-cleft. PLUMBAGINEÆ. p. 304.

526. **AZALEA.** Caps. 5-celled. Cor. campanulate, irregular. Anther with 2 pores. Stigma blunt. *Small Shrubs, with opposite L.* ERICACEÆ. p. 243.

D. *Fl. of* 1 *petal, superior.*

i. *Capsule of* 1 *cell.* PRIMULACEÆ.

673. **SAMOLUS.** Caps. half inferior. Cor. salver-shaped, with 5 divisions and 5 intermediate filiform scales. *L. simple, alternate, quite entire.* p. 303.

ii. *Capsule of* 2–5 *cells.*

508. **JASIONE.** Caps. imperfectly 2-celled, opening by a pore at top. Cor. rotate: divisions linear. Anthers united at base. Stigma club-shaped. *Fl. in heads, with a many-leaved involucrum.* CAMPANULACEÆ. p. 236.

509. **PHYTEUMA.** Caps. 3-celled, bursting at the side. Cor. rotate: segments long, linear. Fil. dilated at base. Stigma 2-cleft. Anthers free. *Fl. in dense bracteate spikes or heads.* CAMPANULACEÆ. p. 236.

510. **CAMPANULA.** Caps. 2–5-celled, not elongated, opening by lateral pores. Cor. campanulate, with broad, shallow segments. Fil. dilated at base. Stigma 2–5-cleft. CAMPANULACEÆ. p. 237.

511. **WAHLENBERGIA.** Caps. half inferior, opening by 3 valves within the segments of the calyx. *Habit and Fl. of* Campanula. CAMPANULACEÆ. p. 240.

512. **EDRAIANTHUS.** Caps. opening within the calyx by irregular valves or fragments, which soon disappear, and leave the whole space open. *Habit and Fl. of* Campanula. CAMPANULACEÆ. p. 241.

513. **ADENOPHORA.** A cylindrical Tube surrounding the base of the Style. *Otherwise like* Campanula. CAMPANULACEÆ. p. 241.

514. **SPECULARIA.** Caps. lineari-oblong, prismatic, 2–5-celled, opening by pores between segments of calyx. Cor. rotate: segments shallow. Stigma 2–5-cleft, revolute. CAMPANULACEÆ. p. 241.

515. **TRACHELIUM.** Caps. 3-celled, opening by as many pores. Cor. funnel-shaped. Style long. Stigma globose. CAMPANULACEÆ. p. 241.

506. **LOBELIA.** Caps. 2–3-celled, opening at top into 2–3 valves. Cor. irregular! Tube cylindrical, split on the upper side. Stigma round, hairy. Anthers cohering. LOBELIACEÆ. p. 236.

507. **LAURENTIA.** Caps. 2–3-celled. Cor. bilabiate: upper lip cloven; lower 3-lobed. Fil. united above the middle. *Very small, smooth plants.* LOBELIACEÆ. p. 236.

iii. *Fr. a berry with 2–3 cells, and several seeds.* CAPRIFOLIACEÆ.

364. **LONICERA.** Cor. tubular or funnel-shaped, unequally 5-cleft. Style filiform. Stigma capitate. *Shrubs, with opposite L. and branches.* p. 162.

E. *Fl. of* 4–5 *petals, inferior.*

i. *Fl. regular. Pet. equal. Sta. on a disc forming the base of the calyx.*

156. **ZIZYPHUS.** Drupe ovate, with a valveless nut. Seeds not furrowed. *Shrubs, with simple, alternate, nerved L.* RHAMNEÆ. p. 73.

157. **PALIURUS.** Fr. dry, surrounded by a wing. Seeds not furrowed. *Habit of* Zizyphus. RHAMNEÆ. p. 73.

158. **RHAMNUS.** Berry 2–4-celled. Cal. funnel-shaped, bearing the petals. Sta. opposite petals. Seeds furrowed at base. *Shrubs, with simple L. and axillary Fl.* RHAMNEÆ. p. 73.

154. **EVONYMUS.** Caps. 4–5-celled (and with as many angles, PERS.), having a peltate disc within. Seeds with a fleshy tunic. Cal. flat. *Shrubs, with simple, opposite L.* CELASTRINEÆ. p. 73.

ii. *Fl. regular. Pet. separate at base. Sta. on receptacle. Shrubs, with climbing stems and divided L.* AMPELIDEÆ.

140. **VITIS.** Berry with 2–5 seeds. Style 0. Pet. united at top! p. 68.

141. **AMPELOPSIS.** Berry with 4 seeds. Style with a capitate stigma. Pet. not united at top. p. 68.

iii. *Fl. irregular; lower Pet. spurred.*

144. **IMPATIENS.** Caps. 5-celled, elastic. Pet. unequal. Cal. 2-leaved, caducous. *Tender, succulent plants. Seeds scattering with a spring.* BALSAMINEÆ. CORYDALES of Linn. p. 71.

99. **VIOLA.** Caps. 1-celled, 5-valved. Pet. unequal; the lowest with a spur. Cal. 5-leaved, produced backwards. VIOLARIEÆ. p. 39.

F. *Fl. of* 5 *petals, superior.*

267. **RIBES.** Berry many-seeded. Cal. bearing the petals. Style cloven. *Shrubs, with divided L.* GROSSULARIÆ. POMACEÆ of Linn. p. 136.

358. **HEDERA.** Berry 5-celled and 5-seeded, crowned by the calyx. Style simple. Pet. broadest at base, not adhering at top. ARALIACEÆ. p. 161.

G. *Fl. with a single perianth.*

164. **CERATONIA.** Polygamous. Cal. 5-parted. Cor. 0. Legume coriaceous. Seeds many, imbedded. *A large Tree, with pinnate, perennial L.* Leguminosæ. p. 75.

674. **GLAUX.** Caps. superior, 5-seeded. Cal. coloured, of 1 L. *L. opposite. Fl. axillary, sessile.* Primulaceæ. p. 303.

251. **ILLECEBRUM.** Caps. superior, (5-valved, Pers.,) 1-seeded. Cal. cartilaginous, of 5 L., thickened and horned at the back. *Plant diffuse, with small, opposite L. and scariose Stipules.* Paronychieæ. Holoraceæ of Linn., as the 2 following genera. p. 130.

252. **PARONYCHIA.** Caps. superior, 1-seeded. Cal. 5-parted, not thickened, somewhat hooded. Five linear scales in lieu of petals. *Resembles* Illecebrum. Paronychieæ. p. 130.

681. **ACHYRANTHES.** Seed 1, superior. Cal. 5-leaved, toothed or fringed. Scales between Fil. connected into a tube below. Scariose Bracts below the Fl. Amaranthaceæ. p. 311.

705. **THESIUM.** Nut inferior, on a fleshy base. Cal. coriaceous, 5-cleft, bearing the stamens. *Branching plants, with narrow L. of an olive-green.* Santalaceæ. p. 322.

II. DIGYNIA.

A. *Fl. of a single perianth, inferior.*

i. *Fruit a drupe.* Urticeæ.

724. **CELTIS.** Cal. 5–6-parted. Style 0. Stigma cloven, divaricate. Drupe 1-seeded. Some Fl. barren. *A Tree, with alternate, stalked, undivided L., and axillary Fl. Fr. edible.* p. 331.

ii. *Caps. of* 2 *cells and* 2 *seeds. Embryo straight.* Urticeæ.

725. **ULMUS.** Caps. membranous, compressed, bordered, superior. *Trees, with stalked, alternate, oblique, undivided L.* p. 331.

iii. *Seed solitary, not enclosed in a seed-vessel. Embryo curved.* Chenopodieæ. Holoraceæ of Linn.

684. **SALSOLA.** Seed coriaceous, imbedded in calyx. Embryo spiral, with the turns almost equally thick. No albumen. Calyx of 5 leaves, transversely keeled, or with dorsal appendages. All Calyces similar. p. 312.

685. **SUÆDA.** Seed crustaceous, imbedded in the fleshy calyx. Embryo spiral. Inner Turns thinner, with albumen on each side. Cal. 5-parted, nearly or quite without any transverse keel. *Plants with alternate, fleshy, terete or semiterete L.* p. 312.

686. **KOCHIA.** Embryo bent round albumen. Cal. 5-cleft, with dorsal appendages, all similar. Stigmas 2. *L. numerous, small, narrow.* p. 313.

687. **CHENOPODIUM.** Seed crustaceous, lenticular. Embryo bent round albumen. Cal. 5-parted, without dorsal appendages; all similar. *L. alternate. No Stipules.* p. 313.

688. **BETA.** Seed kidney-shaped, imbedded in the fleshy calyx. Embryo bent round albumen. Covering coriaceous. Sta. on a fleshy ring. *Smooth and somewhat succulent plants. Fl. in clusters.* p. 314.

695. **OBIONE.** Differs from *Atriplex* in having a membranous seed-coat. *A plant of salt-marshes. L. grey.* p. 315.

696. **ATRIPLEX.** Some Fl. perfect, others without anthers. Calyces different. Sta. 3–5. Seed 1, crustaceous, vertical in the female Fl., horizontal in the perfect. Embryo bent round albumen. p. 315.

Polygonum amphibium.

B. *Corolla inferior, of* 1 *staminiferous petal.*

i. *Follicles* 2. APOCYNEÆ.

542. **APOCYNUM.** Cor. campanulate. Fil. 5, alternate with as many scale-like glands, and with the segments of the corolla. p. 245.

543. **CYNANCHUM.** Cor. rotate. Crown of Nect. cylindrical, 5-tipped. Stigma apiculate. p. 245.

544. **PERIPLOCA.** Cor. rotate: segments somewhat twisted, with 5 intermediate scales, each ending in a long curved point. Staminal Tube of 5, free, externally bearded Fil. p. 246.

545. **GOMPHOCARPUS.** Cor. rotate, spreading. Crown of Nect. of 5 urceolate tubes. Follicles ventricose, covered with soft spines. p. 246.

546. **ASCLEPIAS.** Cor. rotate, reflexed. Crown of the Nect. of 5 hood-like L. Stigma pointless. p. 246.

547. **STAPELIA.** Cor. rotate, fleshy. Nect. a double star, 5-cleft, covering the organs. Follicles subcylindrical. *A fleshy plant, with fetid Fl. The angular leafless Stem beset with acuminate tubercles.* p. 246.

ii. *Fruit a capsule.*

552. **LOMATOGONIUM.** Caps. 1-celled. Placentas attached to margin of valves. Style 0. Cor. rotate, without nectariferous pores. GENTIANEÆ. p. 246.

551. **SWERTIA.** Caps. 1-celled, many-seeded. Cor. rotate; 2 nectariferous pores at base of each segment. *Habit of* Gentiana. GENTIANEÆ. p. 246.

553. **GENTIANA.** Caps. 1-celled, many-seeded. Cor. tubular, without pores. Seeds parietal. *Styles often combined. Plant erect. L. opposite.* GENTIANEÆ. p. 246.

559. **CRESSA.** Caps. 2-valved, 1–4-seeded. Cor. salver-shaped, 5-parted. *Branched. L. simple, alternate, quite entire.* CONVOLVULACEÆ. p. 251.

560. **CUSCUTA.** Caps. 2-celled, 4-seeded, bursting transversely. Cor. campanulate, with internal scales. *Parasitical leafless Herbs, with a twining stem and no cotyledons.* CONVOLVULACEÆ. p. 251.

Velezia occasionally.

C. *Cor. inferior. Pet.* 5. PARONYCHIEÆ.

250. **HERNIARIA.** Caps. membranous, not opening, 1-seeded, invested with calyx. Pet. 5, very narrow, like abortive Fil. *Small plants, with opposite L., and clusters of inconspicuous Fl.* p. 130.

D. *Fl. of* 5 *petals, superior. Seeds* 2. UMBELLATÆ.

[In the following arrangement of the Tribes, I have nearly followed De Candolle. Perhaps it might be improved, as a natural arrangement, by rendering it less systematical. *Crithmum* and *Cachrys* have corky seeds; and to these, perhaps, might be joined *Œnanthe.* This latter genus and *Æthusa* have a white mass on each side of the ripe seed, filling up the surface of the fruit, so as to leave no depression between the seeds. *Conium*, which has curved seeds, would, perhaps, in a more natural arrangement, be joined to the *Ammineæ.* The difference between these and the *Seselineæ* is sometimes obscure; and the student must be careful not to depend upon unripe seeds, since in many genera, where, when young, they form a fruit nearly circular on the section, they afterwards become angular and contracted at their junction; each seed in the section being nearly pentagonal.]

SECT. I. *Kernel straight, or nearly so.*

a. *Umbel imperfect or simple.*

1. ERYNGIEÆ. Fl. in a head. Gen. 271.
2. SANICULEÆ. Umbel simple or imperfect. Fr. subovoid. Gen. 272–275.

3. Hydrocotyleæ. Umbel irregular or imperfect. Seed flattened laterally! Gen. 276.

The L. in these three tribes are somewhat palmatinerved, not compound.

Bupleurum tenuissimum.

b. *Umbel compound, as in all the following divisions. Seeds without secondary ridges.*

4. Ammineæ. Each Seed pentagonal or with 5 prominent ribs; the side forming the junction little or not at all larger than the others. *L. compound, except in* Bupleurum. Gen. 277–293.

5. Seselineæ. Seeds with 5 nearly equal ribs, or pentagonal; the side forming the junction much larger than the others. *L. compound.* Gen. 294–310.

6. Angeliceæ. Seeds somewhat compressed, with 5 prominent ribs, 2 of which are broader and form separate wings. *L. compound.* Gen. 311–315.

7. Peucedaneæ. Fruit very much compressed, with 3 small dorsal ribs; the lateral wings joined. Gen. 316–325.

c. *Fruit with secondary ridges.*

8. Silerineæ. Secondary Ridges less prominent than the primary. Gen. 326, 327.

9. Thapsieæ. Secondary Ridges largest, winged, unarmed. Gen. 328, 329.

10. Daucineæ. Secondary Ridges largest, prickly. Gen. 330, 331.

Sect. II. *Kernel curved so as to present a longitudinal furrow.*

11. Caucalineæ. Secondary Ribs furnished with prickles. Gen. 332, 333.

12. Elæoselineæ. Fruit not prickly. Exterior secondary Ribs winged. Gen. 334.

13. Scandicineæ. Fruit beaked or elongated; no secondary ribs. Gen. 335–341.

14. Smyrneæ. Fruit not prickly, ovoid; no secondary ribs. Gen. 342–354.

Sect. III. *Kernel cup-shaped.*

15. Coriandreæ. Fruit hardly longer than thick. No prominent ridges. An obscure, flexuose depression in place of the primary ridges. Gen. 355, 356.

Sect. I. *Kernel not incurved.*

a. *No complete, compound Umbel.*

Tribe I. *ERYNGIEÆ.*

271. **ERYNGIUM.** Fr. ovoid, prickly. Common Recept. scaly. Bracts many. *Hard plants. L. more or less ternate or palmate; lower often undivided. Teeth spinescent.* p. 141.

Tribe II. *SANICULEÆ.*

272. **HACQUETIA.** Ridges of Fr. even, tubular. Cal. of 5 teeth. All L. radical. Umbel somewhat head-like from the shortness of the rays. p. 142.

273. **ASTRANTIA.** Ridges of Fr. plicato-dentate, inflated. Cal. of 5 L. *Involucels corolla-like.* p. 142.

274. **SANICULA.** Fr. without ridges, covered with hooked prickles. Central Flts. barren; marginal without stamens. Cal. of 5 L. p. 142.

275. **PETAGNIA.** Fl. of Umbellule 3: the middle sessile, fertile; the lateral stalked, barren. p. 142.

Tribe III. *HYDROCOTYLEÆ.*

276. **HYDROCOTYLE.** Fr. with 2 ribs on each side. Cal. 0. *L. simple on a nearly central stalk.* p. 143.

b. *Umbel compound, as in all the following. Seeds without secondary ridges.*

Tribe IV. *AMMINEÆ.*

277. **BUPLEURUM.** Cal. 0. Partial Bracts many, sometimes united, *often simu-*

lating a flower. Pet. roundish, *yellow,* with a broad, involute, retuse appendage. *L. entire! The Kernel in some species is slightly curved.* p. 143.

278. **CICUTA.** Cal. of 5 leafy teeth. Partial Bracts several, unequal. Fl. nearly regular, all perfect. Stripe solitary in each furrow of the fruit. *A perennial, fetid, poisonous, aquatic plant, with a hollow stem and ternato-tripinnate L.* p. 144.

279. **PTYCHOTIS.** Cal. of 5 small teeth. Partial Bracts several. Appendage rising transversely from middle of the obovate, emarginate petal. Stripe solitary. *Stem-L. divided into capillary segments.* p. 145.

280. **FALCARIA.** Cal. of 5 teeth. Partial Bracts half surrounding the umbellule. Pet. with an inflexed, terminal appendage. Stripe solitary. *L. ternate and again divided on one side to the midrib. Margin cartilaginous.* p. 145.

281. **HELOSCIADIUM.** Teeth of Cal. small. Partial Bracts several. Pet. entire. Stripe solitary. *Plants with creeping stems and pinnate L. In* H. inundatum *and* H. crassipes *there is no calyx. The other species might well be reunited to* Sium. p. 145.

282. **SIUM.** Cal. of 5 teeth. Partial Bracts several. Pet. emarginate. Stripes more than one in each furrow. *Smooth aquatic plants, with pinnate L.* p. 145.

283. **AMMI.** Cal. obsolete. General and partial Bracts pinnatifid. Pet. radiant, 2-lobed. Stripe solitary. Fl. all fertile. Kernel somewhat curved. *L. decompound: segments linear. Habit of* Daucus. p. 145.

284. **GASPARRINIA.** Cal. obsolete. Some of the General Bracts divided; partial setaceous. Pet. entire, involute at the tip. Stripe solitary. Kernel somewhat curved. *L. decompound, with short, linear, acute segments.* p. 146.

285. **PETROSELINUM.** Cal. 0. General Bracts 0–2; partial many: all simple. Pet. roundish, nearly entire, uniform. Stripe solitary. Stylopode crenulate. Carpophore entire. *Parsley.* p. 146.

286. **SISON.** Cal. obsolete. General and Partial Bracts each about 3, undivided. Pet. deeply divided. Fr. roundish. Stripe solitary, short. Stigma nearly sessile. *L. pinnate or bipinnate. Lts. of upper L. deeply divided.* p. 146.

287. **BUNIUM.** Cal. obsolete. General Bracts simple or wanting; partial more than 1. Pet. obcordate, with a short appendage. Fr. ovato-oblong. Stripes 1–3 in each furrow. *Root with a subglobular tuber. Stem becoming very thin downwards. L. decompound and divided: segments linear. Includes* Carum, *except* C. Carui. B. flexuosum *sometimes wants the partial bracts, and the kernel is distinctly channeled.* p. 146.

288. **CRYPTOTÆNIA.** Cal. obsolete. Bracts single or wanting. Pet. ovate. Fr. oblong. Stripes many, deeply seated. *L. ternate. Lts. ovate.* p. 146.

289. **PIMPINELLA.** Cal. obsolete. Bracts 0. Pet. emarginate. Fr. ovoid. Stripes many, superficial. *Root-L. pinnate. Stem-L. more divided. Fl. in one species yellow. Fr. in four other species hairy.* p. 146.

290. **APIUM.** Cal. obsolete. Partial Bracts 0. Pet. nearly circular, entire. Fr. subrotund. Stripe solitary (in the lateral furrows triple, Lindley). *Fl. uniform, greenish. L. pinnate: Div. cuneiform, incise.* p. 147.

291. **CARUM.** Cal. obsolete. Partial Bracts 0. Appendage of Pet. narrow. Fr. oval. Stripe solitary. *L. bipinnate. Lower Lts. close to stalk and turned forward.* p. 147.

292. **ÆGOPODIUM.** Cal. 0. Partial Bracts 0. Fr. attenuate towards the conical stylopode. Stripe 0. *Lower L. biternate; upper ternate. Lts. broad, acuminate.* p. 147.

293. **TRINIA.** Diœcious! Cal. 0. Partial Bracts few or none. Pet. of barren Fl. lanceolate; of fertile ovate: both with appendage. Stripe 1 or 0. *Much branched. L. bipinnate: Div. triternate; Segm. linear.* p. 147.

Tribe V. *SESELINEÆ.*

294. **ŒNANTHE.** Cal. of 5 teeth. Partial Bracts many. Outer Fl. barren. Interval between the Kernels filled with a corky mass! Styles erect. Stripe solitary. *Lower L. bipinnate. Root in most species either with tubers or thickened fibres.* p. 147.

295. **CRITHMUM.** Cal. obsolete. General and partial Bracts many. Kernel imbedded in a corky mass. Stigma nearly sessile. Stripe 0. *L. tripinnate. Lts. lanceolato-linear, quite entire, fleshy.* p. 148.

296. **ÆTHUSA.** Cal. obsolete. Partial Bracts 3, pendulous, on one side of umbellule. Ridges thick and corky, with an acute keel. Stripe 1. *Annual plants, with supradecompound L.* p. 148.

297. **FŒNICULUM.** Cal. obsolete. Bracts 0. Pet. rounded, entire, with a broad obtuse appendage. Ridges thin, obtusely keeled. Stripe 1. *Fl. yellow. L. decompound, with lineari-setaceous segments.* p. 148.

2 98 **BRIGNOLIA.** Cal. of 5 teeth. Bracts many. Pet. ovate, entire. Appendage retuse. Fr. cylindrical. Ridges obtusely keeled. Stripe solitary. *Primary L. simple; later pinnate or bipinnate; Lts. ovate, serrate.* p. 149.

299. **SESELI.** Cal. of 5, thick, short, permanent teeth. Partial Bracts many. Fr. oval. Ridges obtuse. Stripe usually solitary. *L. somewhat ternato-decompound. Lts. very narrow.* p. 149.

300. **LIBANOTIS.** Cal. of 5, subulate, deciduous teeth. Bracts many. Fr. ovoid. Ridges obtuse. Stripe solitary. *Young Fr. hairy. L. pinnate, pinnatifid; lower Lts. decussate.* p. 149.

301. **ATHAMANTA.** Cal. of 5 teeth. Partial Bracts many. Fr. flask-like, hairy. Ridges obtuse. Stripes 2 or 3 in each furrow. *L. compound: Segm. multifid. Pet. hairy externally.* p. 149.

302. **TROCHISCANTHES.** Cal. of 5 teeth. Partial Bracts 1 or 2. Pet. obcordate, with a long claw. Ridges of Fr. acute and somewhat winged. Stripes 3 or 4. *Branches numerous; upper opposite or verticillate. Lower L. somewhat triternate. Lts. large, ovato-oblong, acuminate.* p. 150.

303. **LIGUSTICUM.** Cal. of 5 teeth. Partial Bracts few or many. Pet. obcordate, with a very short claw. Ridges of Fr. acute, somewhat winged. Stripes 3 or 4. *Lts. decompound and pinnatifid, or supradecompound. In* L. resinosum *the Pet. are yellow.* p. 150.

304. **WALLROTHIA.** Cal. of 5 teeth. Partial Bracts 5–8. Pet. entire, acute at each end. Ridges of Fr. prominent. Stripes several? *Differs from* Meum *by its evident calyx, and from* Ligusticum *by its entire petals.*—DC. p. 150.

305. **MEUM.** Cal. obsolete. Partial Bracts 3–5. Pet. entire, acute at each end. Ridges of Fr. very acute. Stripes many. *Perennial plants, with finely divided L.* p. 150.

306. **SILAUS.** Cal. obsolete. Partial Bracts many, linear. Style very short. Pet. oblong, *yellowish.* Ridges of Fr. somewhat winged. Stripes many. *Lower L. tripinnate. L. lineari-lanceolate, entire, or* 2–3-*parted. Kernel easily separated, with* 2 *vittæ on inner face.*—J. W. p. 150.

307. **CNIDIUM.** Cal. obsolete. Partial Bracts subulate or setaceous. Ridges of Fr. with a membranous wing. Stripe solitary. *L.* 2–3-*pinnate and pinnatifid.* p. 150.

308. **CORISTOSPERMUM.** Cal. obsolete. Some of the general Bracts laciniate; partial numerous, linear, acuminate, entire, with a membranous margin. Ridges of Fr. slightly winged. Style 0. *Stem erect, leafy. L. supradecompound. Lts. short, pinnatifid.* p. 151.

309. **GAYA.** Cal. obscure. Some of the Bracts 2–3-cleft. Ridges of Fr. slightly winged, nearly equal. Stripes 0. *L. bipinnate, pinnatifid. Stem nearly naked. According to Bert.,* Gaya pyrenaica *has a calyx of* 5 *small teeth. Fr. much compressed.* p. 151.

310. **CONIOSELINUM.** Cal. obscure. Partial Bracts 5–7, lineari-subulate, about as long as umbellule. Ridges with membranous wings; the lateral twice as wide as the dorsal. Stripes 2 or 3. p. 151.

Tribe VI. *ANGELICEÆ.*

311. **SELINUM.** Cal. obsolete. Partial Bracts many. Pet. cordate. All Ridges of Fr. winged. Stripes of dorsal Furrows solitary. *L. tripinnate. Lls.* 3–5*-parted. Segm. narrow, entire.* p. 151.

312. **LEVISTICUM.** Cal. obscure. Bracts many. Pet. roundish, entire, with short appendage. All the Ridges winged. Stripes solitary. *L. decompound. Lts. obovato-cuneate, incisodentate.* p. 151.

313. **ANGELICA.** Cal. obscure. Partial Bracts many. Pet. lanceolate, acuminate, entire. Dorsal Ridges filiform. Stripe solitary. *L. very large, tripinnate. Lts. ovale, serrale. Umbel globose.* p. 151.

314. **ARCHANGELICA.** Cal. of 5 teeth. Partial Bracts many. Pet. elliptical, acuminate, entire. Dorsal Ridges keeled. Stripe 0. Kernel free, covered with numerous fine lines. *Plant nearly as in* Angelica. p. 151.

315. **OSTERICUM.** Cal. of 5 teeth. Partial Bracts many. Pet. roundish, clawed. Dorsal Ridges filiform, all hollow. Stripe 1, to which the kernel adheres. *L. ternalo-decompound. Lts. cordato-ovate, unequally toothed.* p. 151.

Tribe VII. *PEUCEDANEÆ.*

316. **TOMMASINIA.** Cal. of 5 teeth. Bracts 0. Fr. subrotund: dorsal ridges filiform. Internal Face of Seed acutely keeled. One Stripe to each external furrow; two on the inner face. *Resembles* Angelica *in habit.* p. 151.

317. **FERULA.** Cal. of 5 teeth. Partial Bracts 0. Dorsal Ridges of Fr. filiform; edge somewhat thickened. Stripes 2 or 3. *Very large planls, with yellow Fl. and finely divided L.* p. 151.

318. **FERULAGO.** Cal. of 5 teeth. Partial Bracts many. Dorsal Ridges of Fr. filiform. Stripes very numerous. *Rather large plants, with yellow Fl. and finely divided L. According to Koch, the stripes are on the kernel.* p. 152.

319. **PEUCEDANUM.** Cal. of 5 teeth. Partial Bracts many. Dorsal Ridges filiform. Stripe solitary, extending along the furrow. *L. variously shaped and divided. In two species the Fl. are yellow.* p. 152.

320. **HERACLEUM.** Cal. of 5 teeth. Partial Bracts many. Dorsal Ridges fililorm. Stripe solitary, much shorter than furrow, *usually clavate. Large plants, with harsh L., not much divided. Germen hairy.* p. 153.

321. **PASTINACA.** Cal. obsolete. Bracts none. Pet. subround, entire, with a broad, retuse appendage. Stripe narrow, acute, solitary. Ridges very slender. *Root fusiform. L. pinnate. Fl. yellow.* P. Opoponax *sometimes has a few small bracts, and the L. are bipinnate. It has also* 3 *stripes.* p. 153.

322. **ANETHUM.** Cal. obsolete. Bracts 0. Pet. subrotund, entire, with a 4-sided, retuse appendage. Stripe occupying the whole furrow. *Strongly smelling plants. Stem dichotomous. Divisions of L. capillary.* p. 154.

323. **IMPERATORIA.** Cal. obsolete. Bracts many. Dorsal Ridges filiform. Stripe solitary, as long as the furrow. *L. ternate or biternate.* p. 154.

324. **PALIMBIA.** Cal. obsolete. General Bracts 0; partial 0–5. Dorsal Ridges filiform. More stripes than furrows. *L. pinnate, on long, narrow sheaths. Lower Lts. sometimes decussate. Segm. linear.* p. 154.

325. **TORDYLIUM.** Cal. of 5 teeth. Bracts many. Fl. very radiant. Fr. finely striate, thickened at the edge! *Plant rough. L.* pinnate. p. 154.

c. *Fruit with secondary ridges.*

Tribe VIII. *SILERINEÆ.*

326. **SILER.** Cal. of 5 teeth. Bracts 0, or deciduous. Fr. lenticular. Stripe solitary. *L. triternate. Lts. subrotund.* p. 154.

327. **KRUBERA.** Cal. of 5 teeth. General Bracts 2–5; partial 4–5. Fr. lenticular: ridges plicato-crenate. No stripe. *L. multifid: segments short, linear.* p. 154.

Tribe IX. *THAPSIEÆ.*

328. **THAPSIA.** Cal. of 5 teeth. Bracts deciduous. Lateral secondary nerves alone winged. Wings entire. Stripe solitary. Umbel large, many-rayed. *Fl. yellow. L. much divided; the upper ones reduced to the sheathing stalk.* p. 154.

329. **LASERPITIUM.** Cal. of 5 teeth. Bracts numerous, permanent. Each secondary ridge furnished with a membranous wing. *L. decompound. Umbels large, of many rays. Fl. white, except in two species, where they are yellowish, with a purple border.* p. 154.

Tribe X. *DAUCINEÆ.*

330. **DAUCUS.** Cal. of 5 teeth. Bracts numerous, pinnatifid. Fr. slightly compressed. Pr. of the ridges in a simple series. *Umbel of the Fl. flat. Fl. often becoming yellow in drying.* p. 155.

331. **ORLAYA.** Cal. of 5 teeth. Pet. radiant. Partial Bracts many. Fr. compressed. Pr. of the secondary ridges in 2 or 3 series. Stripe single. *Annual plants. L. multifid. Segm. linear. Fl. white, radiant; those of the disc barren.* p. 157.

Sect. II. *Kernel curved.*

Tribe XI. *CAUCALINEÆ.*

332. **CAUCALIS.** Cal. of 5 teeth. Partial Bracts lanceolate, spreading. Fl. radiant; those of the disc barren. Secondary Ridges prickly. Stripe solitary. *L. multifid.* p. 158.

333. **TORILIS.** Cal. of 5 teeth. Partial Bracts 5–8, lanceolate, ciliate. Fl. somewhat radiant. Secondary Ridges replaced by an abundance of prickles. *L. bipinnate, pinnatifid: terminal segments generally lengthened.* p. 158.

Tribe XII. *ELÆOSELINEÆ.*

334. **ELÆOSELINUM.** Teeth of Cal. lanceolate, acuminate. Styles, during the flowering, very short. Wings of dorsal Ridges narrower. A Stripe under each ridge. *Root-L. digitate, decompound. Lls. multifid. Segm. short, setaceous.* p. 158.

Tribe XIII. *SCANDICINEÆ.*

335. **SCANDIX.** Beak as long or longer than seed. Ridges obtuse. Cal. obsolete. Partial Bracts 2–5. Flts. somewhat radiant; outer barren. *Annuals. L. finely divided.* p. 158.

336. **ANTHRISCUS.** Beak not half as long as seed. Ridges apparent only on beak. Cal. obsolete. *Bracts various.* Fl. equal; outer fertile. *L. decompound: segments linear.* p. 158.

337. **PHYSOCAULIS.** Beak 0. Fr. subcylindrical, rough with tubercles and incurved bristles, contracted at the top. Ridges very obtuse. Style very short. Cal. obsolete. Partial Bracts 5. Fl. equal; all fertile. *Stem swelled at the knots. L. bipinnate. Lls. ovate. Differs from* Torilis *in having no calyx.* p. 159.

338. **CHÆROPHYLLUM.** Beak 0. Fr. oblong or linear: ridges very obtuse. Stripe solitary. Style filiform. Cal. obsolete. Partial Bracts reflexed. Fl. somewhat radiant; outer barren. *L. decompound.* p. 159.

339. **BIASOLETTIA.** Beak 0. Fr. oblongo-lanceolate: ridges acute and somewhat winged, equal. Furrows flat. Stripe solitary. Cal. obsolete. Partial Bracts spreading. *L. bipinnate, pinnatifid: segments lanceolate and linear.* p. 160.

340. **MYRRHIS.** Beak 0. Fr. cylindrico-lanceolate. Seed covered with a double membrane, of which the outer is raised into 5 acute, keeled, hollow ridges! Stripe 0. Cal. obsolete. Partial Bracts lanceolate, acuminate. *L. tripinnate. Seeds aromatic.* p. 160.

341. **MOLOPOSPERMUM.** Fr. ovato-oblong: ridges winged, dorsal widest. Stripe solitary, wanting on the internal face. Cal. leafy. Pet. lanceolate, entire, with long acumen. *L. tripinnate. Lts. decursively pinnatifid.* p. 160.

Tribe XIV. *SMYRNEÆ.*

[This group is neither natural in itself, nor well distinguished from others. The degree of curvature in the Kernel is very various.]

342. **MALABAILA.** Cal. of 5 small teeth. Style in Fl. very short. Fr. compressed: ridges winged. Stripes 3. *Differs from* Coristospermum *in its Cal., obcordate Pet., and short Styles.* p. 160.

343. **CACHRYS.** Cal. obsolete. Kernel imbedded in a corky mass. Furrows hardly marked. No Stripe on the pericarp; many Striæ on the kernel. *L. finely divided. Fl. yellow.* p. 160.

344. **PRANGOS.** Cal. obsolete. Kernel imbedded in a corky mass. Furrows wide. Stripe 0. Ridges somewhat winged. Kernel covered with fine striæ. *L. finely divided. Fl. yellow.* p. 160.

345. **LOPHOCACHRYS.** Cal. of 5 teeth. Kernel imbedded in a corky mass. Furrows wide. Stripe 0. Ridges thin, crested. Kernel covered with fine striæ. *L. thick, rigid, somewhat ternately decompound.* p. 160.

346. **ÆGOMARATHRUM.** Cal. of 5 teeth. Kernel imbedded in a corky mass. Ridges very thick and obtuse. Bracts many. *L. finely divided. Fl. yellow.* p. 160.

347. **ECHINOPHORA.** Cal. of 5 teeth. Fl. radiant; the central alone of each umbellule fertile! Fr. imbedded in the common receptacle! *Segm. of L. spinescent.* p. 160.

348. **PHYSOSPERMUM.** Cal. of 5 teeth. Partial Bracts many. Fr. contracted in the middle, not inflated. Ridges thin, smooth. Stripe solitary. *Root-L. triternate.* p. 160.

349. **LECOKIA.** Cal. of 5 teeth. Partial Bracts many, setaceous. Fr. contracted in the middle, not inflated. Ridges thick, corky, prickly. p. 161.

350. **PLEUROSPERMUM.** Cal. of 5 teeth. Bracts many. Pet. obovate, entire. Fr. laterally compressed, inflated. Ridges swelling, hollow. Furrows of inner covering with 1 or 2 stripes each. *Stem hollow. L. 2–3-pinnate. Lts. oblongo-lanceolate, inciso-serrate.* p. 161.

351. **CONIUM.** Cal. obsolete. Partial Bracts 3–5 on one side. Ridges hairless, undulato-crenate; furrows with numerous striæ, but no true stripe. *Umbels many. Fl. small. L. tripinnate.* p. 161.

352. **MAGYDARIS.** Cal. obsolete. Bracts many. Ridges thick, even, densely tomentose. Furrows without stripe. *L. simple and pinnate. Lts. large, ovate or oblong.* p. 161.

353. **COLLADONIA.** Cal. obsolete. Partial Bracts many. Dorsal Ridge on each side wingless; the others winged. Stripe solitary. *Lower L. pinnate. Lts. decursively pinnatifid; those of upper L. bipinnatifid. Fl. yellow.* p. 161.

354. **SMYRNIUM.** Cal. obsolete. Bracts 0. Pet. entire, with inflexed acumen. Fr. contracted at joining. Three dorsal ridges prominent; lateral obliterate. Stripes many. *Fl. yellowish or greenish. Lower L. ternately decompound. Lts. not minutely divided.* p. 161.

SECT. III. *Kernel cup-shaped.*

Tribe XV. *CORIANDREÆ.*

355. **BIFORA.** Cal. 0. Bracts few or 0. Fr. a double globe, granulate, marked with 5, indistinct, impressed striæ. *Annual, fetid Herbs. L. much divided.* p. 161.

356. **CORIANDRUM.** Cal. of 5 teeth. Partial Bracts 3, on one side. Fr. a single globe, with 5 depressed, and 4 somewhat elevated and keeled ridges. *Herb, as in* Bifora. p. 161.

III. TRIGYNIA.

A. *Flowers superior.* CAPRIFOLIACEÆ.

362. **SAMBUCUS.** Cor. 5-cleft. Berry with 3 seeds. *Cal. small,* 5-parted, permanent. *Stem arborescent, herbaceous or shrubby. L. opposite, pinnate, serrate. Fl. in terminal cymes.* p. 162.

363. **VIBURNUM.** Cor. 5-cleft. Berry with 1 seed. Cal. small, 5-parted, permanent. *Shrubs, with opposite undivided L. Fl. numerous, in terminal cymes.* p. 162.

B. *Flowers inferior.*

160. **RHUS.** Pet. 5. Berry dry, with 1–3 seeds. Cal. small, 5-parted, permanent. *Shrubs with alternate L. Fl. in panicles or racemes. Stip.* 0. TEREBINTHACEÆ. p. 74.

153. **STAPHYLEA.** Pet. 5. Caps. 2–3, inflated. Cal. 5-parted, as large as corolla. Nect. cup-shaped, central. *A Shrub, with pinnate L., and Fl. in drooping racemes.* CELASTRINEÆ. p. 73.

240. **TAMARIX.** Pet. 5. Caps. of 3 valves, 1 cell, and many seeds. Seeds feathered. Fil. inserted on the 5-parted calyx. (T. germanica *has* 10 *Fil. united at base.*) *Slender Shrubs, with minute, fleshy, sessile L. Fl. in racemes.* TAMARISCINEÆ. p. 128.

248. **TELEPHIUM.** Pet. 5. Caps. 3-edged. Sep. 5. Stamens inserted on the base of the petals. Caps. imperfectly 3-celled. Seeds numerous. Placenta central. *A woody, procumbent plant. Fl. corymbose. L. furnished with stipules.* PARONYCHIEÆ. p. 130.

249. **CORRIGIOLA.** Pet. 5. Seed 1, hard, 3-edged, covered with the permanent calyx. Sep. hardly cohering. Cal. as large as Cor. *Small, smooth, herbaceous Annuals, with scattered, undivided L.* PARONYCHIEÆ. p. 130.

114. **DRYPIS.** Pet. 5, trifid, crowned at the mouth with 2 teeth. Caps. circumsciss, 1-seeded. *Cal. tubular, of* 1 *L.,* 5*-toothed. Stem square. L. opposite.* CARYOPHYLLACEÆ. p. 53.

Polycarpon alsinifolium and peploides.

IV. TETRAGYNIA. DROSERACEÆ.

104. **PARNASSIA.** Nectaries fringed with gland-bearing filaments! Caps. of 1 cell and 4 valves. Pet. 5, concave, with longitudinal, pellucid ribs. *Stems simple, each bearing one smooth, entire L. and* 1 *Fl.* p. 42.

V. PENTAGYNIA.

677. **STATICE.** Pet. 5, inferior. Seed 1, clothed with the base of the inferior, funnel-shaped calyx. Border of Cal. plaited, skinny, permanent. *Rigid, perennial Herbs, with simple, chiefly radical L.* PLUMBAGINEÆ. p. 304.

129. **LINUM.** Pet. 5, inferior. Caps. of 10 cells and 10 seeds. *L. simple, entire, mostly alternate.* LINEÆ. p. 60.

212. **SIBBALDIA.** Pet. 5, inferior. Germens 5, becoming as many seeds. Cal. in 10 segments, permanent; the 5 inner larger. Fil. on rim of calyx. *A low, herbaceous plant. L. ternate. Stip. attached to L.-stalks.* ROSACEÆ. p. 120.

102. **DROSERA.** Pet. 5, inferior. Cal. 5-cleft. Caps. of 1 cell and 3 or 4 valves. Seeds numerous, each with an arillus. *Stemless. L. undivided. Hairs each tipped with a viscid gland.* DROSERACEÆ. p. 42.

103. **ALDROVANDA.** Pet. 5, inferior. Cal. 5-parted. Caps. of 5 valves, 1 cell, and 10 seeds. *Growing in mud, and afterwards floating. L. in whorls. Stalks axillary,* 1*-flowered.* DROSERACEÆ. p. 42.

Myosurus. Ceratocephalus. Sedum rubens.

VI. HEXANDRIA.

I. MONOGYNIA.

A. Fl. with calyx and corolla.
B. No calyx. Fl. superior, mostly inclosed at first in a sheath.
C. No calyx. Fl. inferior, mostly without a sheath.
  i. Fr. a berry of 3 cells.
  ii. Fr. a capsule, opening into 3 follicles.
  iii. Fr. a capsule. Dissepiments attached to the centre of the valves.
    a. Fil. bearded.
    b. Fil. not bearded. Pet. 6.
      * Seeds many in each cell.
      ** Seeds few (2–8, or perhaps sometimes 10 or 12) in each cell.
    c. Fil. not bearded. Pet. 1.
D. Fl. on a common spadix.
E. No Petals. Cal. inferior, persistent.

A. *Fl. with calyx and corolla.*

22. **BERBERIS.** Cal. of 6 sepals, inferior. Pet. 6, each with 2 glands at base. Berry with 2 seeds. *A Shrub. L. alternate, having bristly serratures, a thorn at base of leaf-bud, and a raceme of yellow Fl.* BERBERIDEÆ. p. 11.

23. **LEONTICE.** Sep. 6, deciduous, inferior. Pet. 6. Nect. of 6 L., seated on the claws of the petals. *Herbaceous, with compound L.* BERBERIDEÆ. p. 11.

106. **FRANKENIA.** Cal. of 1 Sep., inferior, 5-cleft. Pet. 5. Caps. of 1 cell and many seeds. *Decumbent, copiously branched plants, with small, opposite, entire L.* FRANKENIACEÆ. p. 43.

237. **PEPLIS.** Cal. with 6 deep segments and 6 intermediate plaits, inferior. Pet. 6. Caps. of two cells and many seeds. *Small herbaceous plants, with simple L. and small axillary Fl.* LYTHRARIÆ. p. 127.

361. **LORANTHUS.** Cal. a nearly entire margin, superior. Cor. 6-parted. Berry inferior, of 1 seed. *A parasitic Shrub, with opposite L., much like* Viscum. LORANTHACEÆ. p. 162.

B. *Fl. without calyx, but included in a sheath when young* (*except in* Agave), *superior.* AMARYLLIDEÆ. SPATHACEÆ of Linn.

779. **STERNBERGIA.** Sheath simple, 1-flowered. Cor. 6-parted, funnel-shaped: segments equal. Sta. affixed to the erect tube. Mouth naked. *Root bulbous.* p. 360.

780. **PANCRATIUM.** Cor. funnel-shaped. Pet. 6. Nect. campanulate, with 6 long, staminiferous teeth. *Root bulbous. L. radical. Sheath green within.* p. 360.

781. **NARCISSUS.** Pet. 6, attached to a campanulate nectary, within which are the stamens. *Root bulbous. L. radical, in two ranks. Stalk central. Fl. from a simple, terminal, sheathing bract.* p. 360.

782. **LEUCOJUM.** Cor. campanulate, of 6 nearly equal petals. Sta. simple, equal. *Root bulbous. L. radical. Fl. drooping, with a solitary sheathing bract.* p. 362.

783. **GALANTHUS.** Pet. 6: the three inner shorter and emarginate. *Root bulbous. L. radical, in pairs. Fl. drooping, with a distant cloven bract.* p. 362.

784. **AGAVE.** No Sheath. Cor. funnel-shaped. Tube short. Border 6-parted. Sta. filiform, exsert after flowering. *L. fleshy, all radical. Scape very tall. Fl. very numerous.* CORONARIÆ of Linn. p. 362.

C. *Fl. without calyx, inferior.*

i. *Fr. a berry of* 2 *or* 3 *cells.* Asparageæ.

785. **ASPARAGUS.** Cor. 6-parted, permanent. Berry of 3 cells and 3 seeds. Stigmas 3. *L. very numerous, small, very narrow, tufted. Fl. lateral, stalked, drooping.* p. 362.

786. **STREPTOPUS.** Cor. 6-parted, with 6 oblong pits at base. Stigmas 3, very short (reflexed, Poll.). Berry nearly globose, with 3 cells and many seeds. *L. amplexicaul, alternate. Fl.-stalks axillary, pendulous. Placed by Jussieu among the* Liliaceæ. p. 362.

788. **CONVALLARIA.** Cor. tubular or campanulate; border in 6 segments. Berry of 2–3 cells and as many seeds. Stigma 1, obtuse, triangular. *Perennial Herbs, with sessile, ribbed, entire L.* p. 363.

ii. *Fr. a capsule, opening into* 3 *follicles.* Colchicaceæ.

809. **BULBOCODIUM.** Cor. funnel-shaped. Pet. 6, on very long, staminiferous claws. *Bulb coated. L. and Fl. embraced by a radical sheath.* p. 373.

iii. *Fr. a capsule. Dissepiments attached to middle of valves.*

a. *Filaments bearded.*

814. **NARTHECIUM.** Pet. 6, lineari-lanceolate, spreading. Seeds many, tunicate, with a thread-like appendage at each end. *Root creeping. L. sword-shaped, entire.* Junceæ. p. 373.

800. **SIMETHIS.** Pet. 6, spreading, deciduous. Style filiform, deciduous. Seeds 2 in each cell. *Root of long tubers. L. linear.* Liliaceæ. p. 365.

b. *Filaments not bearded. Petals* 6.

* *Seeds many in each cell.* Liliaceæ. Coronariæ of Linn., *except* Erythronium.

796. **ERYTHRONIUM.** Pet. reflexed: inner each with two calli at base. *Root tuberous. L. radical, stalked. Scape* 1*-flowered.* Sarmentaceæ of Linn. p. 365.

793. **TULIPA.** Pet. without nectaries or calli. No Style. Seed flat. *Bulb coated. Stem simple, leafy at bottom.* p. 363.

794. **FRITILLARIA.** Pet. each with a nectariferous cavity at base. *Bulb lobed or scaly. Stem simple, leafy. Fl. terminal, pendulous.* p. 364.

795. **LILIUM.** Pet. each with a tube-like channel at base. *Bulb compound, scaly. Stem simple, leafy.* p. 364.

797. **LLOYDIA.** Pet. each with a transverse nectariferous plait near the base. Seed flat. *Root-L. grass-like; upper shorter.* p. 365.

** *Seeds few* (2 *to* 8, *or perhaps sometimes* 10 *or* 12) *in each cell.* Liliaceæ, *except* Aphyllanthes. Coronariæ of Linn., *except* Allium *and* Aphyllanthes.

798. **ASPHODELUS.** Pet. spreading. Nect. of 6 staminiferous valves, covering the germen. *Root tuberous. Fl. in racemes, never blue.* p. 365.

799. **ANTHERICUM.** Pet. spreading, 3-nerved. Fil. filiform. Stigma obtuse. Style 3-edged, persistent. Seeds angular. *Root tuberous. L. narrow.* p. 365.

801. **PARADISIA.** Fil. on the carpophore, subulate, bent down. Style filiform, bent down, longer than stamens. Scape naked. Rac. simple, *terminal.* p. 365.

805. **GAGEA.** Pet. spreading, *yellow.* Sta. on petals, not dilated at base. *Root bulbous. Stem scape-like, with L. only at the Fl.-stalks.* p. 367.

806. **ORNITHOGALUM.** Pet. lanceolate, persistent, spreading. Fil. dilated at base, hardly adhering to petals. *Bulb coated. L. radical. Pet. green on the keel.* p. 368.

807. **ALLIUM.** Pet. ovate, sessile. Fil. subulate, flattened. Stigma acute. Seeds angular.

Umbel at first included in one or more sheathing bracts. *Herbage with a strong peculiar smell when bruised.* p. 369.

815. **APHYLLANTHES.** Cor. of 6 petals. Sheath dimidiate, glumaceous. Caps. with 3 angles, 3 valves, and 3 cells. *Scapes numerous, furnished with channeled scales at base instead of L.* JUNCEÆ. p. 374.

802. **SCILLA.** Pet. ovato-oblong, spreading, deciduous, 1-nerved. Fil. filiform. *Bulb coated. Fl. in racemes, never yellow.* p. 365.

c. *Fil. not bearded. Pet.* 1. LILIACEÆ.

803. **HYACINTHUS.** Cor. funnel-shaped or campanulate: segments 1-nerved. Fil. lanceolate. *Bulb coated. Fl. in racemes. Seeds roundish.* In *H. patulus* and *H. nonscriptus,* the margins of each petal are continued independently quite to their base, giving the appearance of a *Scilla,* but they are united within the margin. p. 366.

804. **MUSCARI.** Cor. cylindrical or urceolate, with 6 teeth. Fil. very short, dilated at base. *Bulb coated. L. channeled. Fl. in racemes, bracteolate.* p. 367.

808. **HEMEROCALLIS.** Cor. campanulate, on a cylindrical tube. Sta. bent down. Caps. 3-edged. *Root of thick fibres. L. scattered, linear. Fl. large, yellow or yellow-brown.* p. 372.

D. *Fl. on a common spadix!* AROIDEÆ.

821. **ACORUS.** Cor. of 6 petals. Style 0. Spadix many-flowered. *Smooth, aromatic, aquatic Herbs, without stem, and with radical, equitant, sword-shaped L. Scape leaf-like, bearing one lateral spadix.* p. 378.

E. *Pet.* 0. *Cal. inferior, persistent.* JUNCEÆ.

816. **JUNCUS.** Sep. 6, glume-like. Caps. of 3 cells and 3 valves. Seeds numerous, attached to inner edge of dissepiment. *L. alternate, undivided, or wanting, hairless, not flat. Fl. greenish, with 2 close bracts to each.* p. 374.

817. **LUZULA.** Sep. 6. Caps. of 1 cell, 3 valves, and 3 erect seeds. *Root creeping. Stem leafy, simple. L. grassy, flat, more or less fringed with long, irregular hairs.* p. 377.

II. DIGYNIA.

699. **OXYRIA.** Cal. of 2 L. Pet. 2. Seed 1, compressed, winged. *Herbaceous, acid, smooth. L. stalked, nearly all radical.* POLYGONEÆ. HOLORACEÆ of Linn. p. 319.

849. **ORYZA.** Glumes 2, not precisely opposite. Outer Pale ribbed and grained. *Rice.* GRAMINA. p. 397.

III. TRIGYNIA.

698. **RUMEX.** Cal. of 3 L. Pet. 3. Seed 1, naked, triangular. *Smooth, perennial Herbs. Fl. numerous, green, forming whorled, terminal racemes. Each Fl.-stalk with a joint near the base.* POLYGONEÆ. HOLORACEÆ of Linn. p. 318.

747. **SCHEUCHZERIA.** Perigonium deeply 6-parted. Caps. 3, inflexed, 1-seeded, joined at base. *Smooth Herbs. L. semicylindrical, sheathing, with a pore at top.* ALISMACEÆ. p. 345.

748. **TRIGLOCHIN.** Perigonium of 6 L. Caps. 3 or 6, 1-seeded, attached to an angular axis, at last separating at the base. *Marsh plants. L. linear, all radical. Rac. erect, of numerous, small, greenish Fl.* ALISMACEÆ. p. 345.

810. **MERENDERA.** Cal. 0. Cor. campanulate, 6-parted: divisions with staminiferous claws. Caps. of 3, erect follicles, not inflated. *Fl. from the root.* COLCHICACEÆ. p. 373.

811. **COLCHICUM.** Cal. 0. Cor. of 1 petal, tubular. Caps. 3, inflated. Seeds numerous. *Root a bulb. Stem* 0. *L. and Fl. enveloped in a common sheath. Fl. from the root.* COLCHICACEÆ. p. 373.

812. **VERATRUM.** Some of the Fl. barren. Cal. 0. Pet. 6. Caps. 3, many-seeded. Sta. on receptacle. Anthers splitting transversely into 2 valves. *L. broad, many-nerved. Fl. in a branched panicle.* COLCHICACEÆ. CORONARIÆ of Linn. p. 373.

813. **TOFIELDIA.** Cal. 0. Pet. 6. Caps. 3, superior, connate at base. Seeds numerous. Anthers bursting longitudinally. *Herbaceous Perennials, with sword-shaped L., mostly radical. A three-lobed Bract near the Fl.* COLCHICACEÆ. CORONARIÆ of Linn. p. 373.

818. **CHAMÆROPS.** Sheath of 1 valve, compressed. Spadix branched. Drupes 3, each with 1 seed. Three outer Div. of Cor. bracteiform. PALMÆ. p. 378.

Polygonum **B. ii.**

IV. POLYGYNIA. ALISMACEÆ.

744. **ALISMA.** Sep. 3. Pet. 3. Caps. 6 or more, 1–2-seeded. *Aquatic, smooth Perennials, with entire L., and a panicle or umbel of many Fl.* p. 345.

VII. HEPTANDRIA.

I. MONOGYNIA. PRIMULACEÆ.

661. **TRIENTALIS.** Sep. 7. Cor. 7-parted. Caps. of about 7 valves. Seeds with a tunic. *Stem simple, leafy at top.* p. 299.

VIII. OCTANDRIA.

I. MONOGYNIA.

A. *Fl. with calyx and corolla, superior.*

227. **EPILOBIUM.** Caps. cylindrical, 4-celled. Seeds bearded. Cal. 4-cleft. Pet. 4. *Herbs, with undivided L., generally toothed. Fl. terminal, without scent, purple.* ONAGRARIÆ. p. 125.

228. **ŒNOTHERA.** Caps. cylindrical, 4-celled. Seeds naked. Cal. 4-cleft. Pet. 4. *Herbs, with undivided L., and large, showy, short-lived Fl. from axils of upper L.* ONAGRARIÆ. p. 126.

516. **VACCINIUM.** Berry 4-celled. Cal. 4-cleft. Cor. 4-cleft, ovate or campanulate. Fil. on an epigynous disc. *Small Shrubs, with alternate undivided L. Fr. eatable.* VACCINIEÆ. p. 241.

517. **OXYCOCCUS.** Berry 4-celled, many-seeded. Cal. with 4 teeth. Cor. 4-parted, rotate. Fil. on an epigynous disc. *Stems filiform.* VACCINIEÆ. p. 241.

B. *Fl. with calyx and corolla, inferior.*

525. **DABEOCIA.** Caps. with 4 cells, opening at the dissepiments. Cal. 4-cleft. Cor. ovate, 4-toothed. Anthers sagittate, opening with oblique pores at the apex, longer than filaments. Stigma obtuse. *A heath-like Shrub.* ERICACEÆ. p. 243.

523. **ERICA.** Partitions of Caps. simple, from the centre of the valves. Cal. of 4 sepals. Cor. of 1 petal, 4-cleft. *Low Shrubs, with small, opposite or whorled L. Fl. on simple bracteate stalks, never blue.* ERICACEÆ. p. 242.

522. **CALLUNA.** Partitions of Caps. adhering to axis. Valves opening at the dissepiments. Cal. double, each part composed of 4 sepals! Cor. of 1 petal. *A low Shrub, with opposite L.* ERICACEÆ. p. 242.

139. **ACER.** Caps. winged! Seeds 1 or 2. Cal. 5-cleft. Pet. 5. *Trees, or Shrubs, with opposite branches and L. L. more or less palmate, deciduous. No Stipules. Some of the Fl. imperfect.* ACERINEÆ. p. 67.

550. **CHLORA.** Germen without disc or glands. Caps. of 1 cell. Sep. 6–8, corresponding with segments of corolla. *Smooth, glaucous, bitter Annuals, with opposite L.* Gentianeæ. p. 246.

C. *No Petals.* Thymeleæ.

701. **STELLERA.** Cal. coloured, 4-cleft, inferior. Sta. in 2 series. Style terminal. Nect. beaked, covered with the withered calyx. Seed 1. *Erect, annual.* p. 321.

702. **PASSERINA.** Cal. coloured, funnel-shaped, 4-cleft, inferior. Sta. in one series. Style lateral. Nut with 1 seed, covered with the withered calyx. *Small Shrubs, with quite entire L.* p. 321.

703. **DAPHNE.** Cal. coloured, 4-cleft, inferior. Berry with 1 seed. *Acrid Shrubs, with a silky inner bark. L. quite entire.* p. 321.

II. DIGYNIA. Rosaceæ.

214. **SPALLANZANIA.** Cal. double; outer 10–12-cleft; inner 5-cleft, persistent. Pet. 5, inserted on calyx. Sta. 5–10. Seeds 1–2, enclosed in the hardened tube of the inner calyx. p. 120.

Chrysosplenium. Mœhringia muscosa.

III. TRIGYNIA. Polygoneæ. Holoraceæ of Linn.

700. **POLYGONUM.** Cal. coloured, 4–6-parted, inferior, persistent. Cor. 0. Sta. 5–9. Seed 1, naked. *Herbaceous. L. alternate, simple, revolute in the bud, sheathing, or attached to a membranous, sheathing stipule.* p. 319.

IV. TETRAGYNIA.

787. **PARIS.** Sep. 4. Pet. 4. Berry 4-celled, superior. Seeds many, globose. *Perennial. Stem simple, bearing a whorl of entire L. at top, and a central Fl.* Asparageæ. p. 363.

357. **ADOXA.** Cal. half inferior, 2–3-leaved. Cor. superior, 4–5-cleft. Berry globose, invested with the calyx. Seeds 4, bordered. *Minute, delicate, perennial plants, with twice ternate L. and a head of green Fl.* Araliaceæ. p. 161.

128. **ELATINE.** Sep. 3–4. Pet. 3–4. Sta. as many, or twice as many, as petals. Caps. superior, depressed, with 4 valves and 4 loculicidal partitions. Seeds many, oblong. *Small, aquatic Annuals, with opposite or whorled L. and axillary Fl.* Caryophyllaceæ. p. 59.

IX. ENNEANDRIA.

I. MONOGYNIA. Laurineæ.

704. **LAURUS.** Cal. 0. Cor. calyx-like, 4–7-cleft, persistent. Drupe with 1 seed. Sta. 6–12. *Large Shrubs, or small Trees, with alternate undivided L. Germen surrounded with biglandular threads.* p. 322.

II. HEXAGYNIA. Alismaceæ.

746. **BUTOMUS.** Cal. 0. Pet. 6. Caps. 6, many-seeded. *A tall, stately, aquatic plant, with a large bracteate umbel of Fl. L. 3-edged, with a peculiar twist at top.* p. 345.

X. DECANDRIA.

I. MONOGYNIA.

A. *Cor. papilionaceous. Fr. a legume.* Leguminosæ.

162. **ANAGYRIS.** Cal. urceolate, with 5 teeth. Standard very small. Wings shorter than the keel. *A large, erect Shrub, with stalked, ternate L. and stipules opposite to them.* p. 75.

163. **CERCIS.** Cal. gibbous at base, with 5 teeth. Wings exceeding standard and keel. *A Shrub, or small Tree, with simple, reniform L. Racemes of Fl. on trunk and branches.* p. 75.

B. *Cor. not papilionaceous, polypetalous. Fr. a capsule.*

146. **TRIBULUS.** Cal. 5-parted. Pet. 5. Style 0. Caps. (Nuts) 5, gibbous, spinous, many-seeded. *L. abruptly pinnate. Stalks solitary, axillary, 1-flowered.* RUTACEÆ. p. 71.

147. **FAGONIA.** Sep. 5, deciduous. Pet. 5. Caps. of 5 cells and 5 seeds. *Annual. L. opposite. Stip. in pairs. Stalks solitary, axillary, 1-flowered.* RUTACEÆ. p. 72.

148. **ZYGOPHYLLUM.** Sep. 5. Pet. 5. Each filament with a scale near the base. Caps. pentagonal, of 5 cells and many seeds. *Perennial. L. simple or in pairs. Stalks 1-flowered, solitary, axillary.* RUTACEÆ. p. 72.

149. **RUTA.** Cal. 5-parted. Pet. 4–5, concave, equal. Recept. surrounded with 10 honey-bearing dots. Caps. 4–5-lobed, with as many cells. Seeds numerous. *Somewhat shrubby, abounding in glands, having a strong smell. Fl. yellow, in a terminal panicle or corymb.* RUTACEÆ. p. 72.

151. **DICTAMNUS.** Sep. 5. Pet. 5, unequal, spreading. Fil. covered with glandular dots. Style filiform. Caps. 5, united on a short thecaphore; 1 or 2 seeds ripening in each. *Perennial, erect, with a terminal raceme. Upper L. pinnate, with an odd Lt.* RUTACEÆ. p. 72.

528. **LEDUM.** Cal. 5-toothed. Pet. 5. Anthers opening with 2 pores at the top. Caps. of 5 cells. Dissepiments from margins of valves, opening from the base. *Small Shrubs, near* Rhododendron *in appearance.* ERICACEÆ. p. 243.

529. **PYROLA.** Cal. 5-parted, inferior. Pet. 5. Anthers of 2 cells, each opening by a pore at the base. Cap. 5-celled, opening at the angles. *Perennial. L. simple, stalked, evergreen. Fl. in an upright raceme.* PYROLACEÆ. p. 243.

530. **MONOTROPA.** Pet. 8 or 10, inferior; those of outer series protuberant at base. Anthers of 1 cell and 2 valves. Caps. 4–5-celled, many-seeded. *A brown, leafless plant.* PYROLACEÆ. p. 243.

C. *Fl. regular, monopetalous, inferior.*

518. **ARBUTUS.** Cal. very small, 5-cleft. Cor. ovate, 5-cleft, transparent at base. Berry of 5 4-seeded cells. *An evergreen Shrub, or low Tree, with simple, serrate L., and an eatable Fr.* ERICACEÆ. p. 214.

519. **ARCTOSTAPHYLOS.** Cal. 5-cleft. Cor. ovate, 5-cleft. Drupe with 5 one-seeded nuts. *Trailing Shrubs.* ERICACEÆ. p. 242.

520. **ANDROMEDA.** Cal. very small, 5-parted. Cor. ovate or campanulate; the segments recurved. Caps. of 5 cells and many seeds. Dissepiment in middle of valves. *Small Shrubs, with simple alternate L.* ERICACEÆ. p. 242.

521. **CASSANDRA.** Cal. with bracts at the base. Cor. contracted at the mouth, sometimes divided into separate petals. Caps. including 5, bivalve, many-seeded carpels. ERICACEÆ. p. 242.

524. **PHYLLODOCE.** Cal. 5-parted. Cor. ovate, 5-toothed. Anthers truncate at base, opening by pores at the top, shorter than filaments. Stigma peltate, with 5 tubercles. Caps. opening at dissepiment. *Differs little from* Dabeocia, *except in the number of its parts.* ERICACEÆ. p. 242.

527. **RHODODENDRON.** Cal. 5-parted. Cor. somewhat funnel-shaped (or rotate, BERT.), rather oblique. Sta. declined. Anthers with 2 pores at the top. Partitions of Caps. from margin of valves. *Shrubs, with simple, alternate L. and handsome Fl.* ERICACEÆ. p. 243.

532. **STYRAX.** Cal. short, inferior, campanulate. Cor. funnel-shaped, 5-parted, inserted

on calyx. Drupe with 1 or 2 nuts. Fil. united at base and inserted on corolla. *A tall Shrub, with simple L. and handsome white Fl.* EBENACEÆ. p. 244.

II. DIGYNIA.

A. *Corolla* 0.

254. **SCLERANTHUS.** Cal. tubular, of 1 L., persistent. Seeds 2, smooth. *Rigid Herbs, with opposite, linear, combined L.* PARONYCHIEÆ. p. 131.

270. **CHRYSOSPLENIUM.** Cal. coloured. Caps. with 2 beaks, 1 cell, and many seeds. *Humble plants, with stalked, undivided, kidney-shaped L., and a corymb of small, yellow, terminal Fl.* SAXIFRAGEÆ. p. 141.

B. *Fl. with calyx, and a corolla of* 5 *petals.*

268. **SAXIFRAGA.** Cal. 5-parted. Caps. with 2 beaks, 1 cell, and many seeds; opening between the beaks. *Herbs, very various in form, never very large. Cal. more or less attached to the fruit, but never completely superior.* SAXIFRAGEÆ. p. 136.

269. **ZAHLBRUCKNERA.** Pet. of the same substance as the Div. of the calyx. In other respects like *Saxifraga.* p. 141.

107. **GYPSOPHILA.** Cal. campanulate, of one L., angular. Pet. cuneato-ovate, without claws. Caps. globose, 1-celled. CARYOPHYLLACEÆ. p. 44.

108. **DIANTHUS.** Cal. cylindrical, without angles, furnished with scales at the base. Pet. 5, clawed. Caps. cylindrical, 1-celled, many-seeded. CARYOPHYLLACEÆ. p. 44.

109. **SAPONARIA.** Cal. tubular, naked. Pet. 5, clawed. Fil. subulate. Caps. oblong, 1-celled, many-seeded. *Herbaceous. L. opposite.* CARYOPHYLLACEÆ. p. 46.

113. **VELEZIA.** Cal. tubular, filiform, naked. Pet. with long claws. Fil. capillary. Caps. cylindrical, 1-celled. Seeds imbricate. Sta. sometimes only 5. *A rigid, forked, erect Annual.* CARYOPHYLLACEÆ. p. 53.

117. **GOUFFEIA.** Cal. 5-parted. Pet. entire. Caps. with 1 cell, 2 valves, and 1–2 seeds. *Annuals, with short, linear, opposite L., and the habit of* Arenaria. CARYOPHYLLACEÆ. p. 53.

123. **MŒHRINGIA.** Cal. of 4–5 sepals. Pet. 4 or 5. Caps. 1-celled, with 3, 4, or 6 valves. Seeds with an arillus. CARYOPHYLLACEÆ. p. 56.

III. TRIGYNIA. CARYOPHYLLACEÆ.

110. **CUCUBALUS.** Cal. campanulate, with 5 teeth. Pet. 5, clawed, cloven. Caps. berry-like, 1-celled, indehiscent. p. 47.

111. **SILENE.** Cal. of 1 L., naked, conical or cylindrical, 5-toothed. Pet. 5, clawed, cloven. Caps. imperfectly 3-celled, opening with 6 teeth. *L. opposite, undivided, on short combined stalks.* p. 47.

118. **CHERLERIA.** Sep. 5. Pet. 5, very small, emarginate. Five of the Sta. on back of nectaries. Caps. with 3 valves and 1 cell, few-seeded. *A dwarf, tufted, mountain plant.* p. 53.

119. **ALSINE.** Sep. 5. Pet. 5, entire. All the Fil. on receptacle; the outer with 2 glands at the base. Caps. of 1 cell and 3 valves. *Weak, diffuse, herbaceous plants, with opposite L.* p. 53.

120. **ARENARIA.** Sep. 5, spreading. Pet. 5, entire. Caps. of 1 cell and 6 valves, many-seeded. *Habit of* Alsine, *which is also that of* Stellaria *and* Cerastium. p. 55.

121. **STELLARIA.** Sep. 5, spreading. Pet. 5, deeply cloven. Caps. of 1 cell and 6 valves. *Herbs, with weak, straggling stems.* p. 56.

Tamarix germanica. Garidella.

IV. PENTAGYNIA.

125. **SPERGULA.** Sep. 5. Pet. 5, undivided. Caps. ovoid, of 1 cell and 5 valves. *Weak plants, with narrow L.* Caryophyllaceæ. p. 57.

126. **MŒNCHIA.** Sep. 4–5. Pet. 4–5, entire. Sta. 4–10. Styles 4–5. Caps. 1-celled. Valves 8–10. Caryophyllaceæ. p. 58.

127. **CERASTIUM.** Sep. 5. Pet. cloven. Caps. of 1 cell, opening at the top into 10 teeth. *Weak, straggling Herbs, with opposite L. and white Fl.* Caryophyllaceæ. p. 58.

112. **LYCHNIS.** Cal. tubular, with 5 teeth. Pet. 5, clawed. Caps. of 1 or 5 cells. Seeds many. *Erect, branched.* Caryophyllaceæ. p. 52.

260. **SEDUM.** Cal. 5-cleft. Pet. 5. Caps. 5, each with a scale at base. *L. fleshy, mostly alternate.* Crassulaceæ. p. 132.

258. **UMBILICUS.** Cal. 5-cleft. Cor. of 1 petal. Caps. 5, each with a scale at base. *Fleshy plants. L. nearly circular, alternate.* Crassulaceæ. p. 131.

145. **OXALIS.** Sep. 5. Pet. connected by the claws. Caps. with 5 angles and 5 cells. Seeds few, coated. *L. ternate, acid.* Oxalideæ. p. 71.

V. DECAGYNIA. Phytolacceæ. Holoraceæ of Linn.

683. **PHYTOLACCA.** Cal. 5-parted. Cor. 0. Berry round, with 10 furrows, 10 cells, and 10 seeds. *A tall, showy Perennial, with alternate, undivided L., to which the branches are opposite. Fl. in pendent racemes.* p. 312.

XI. DODECANDRIA.

I. MONOGYNIA.

712. **ASARUM.** Cal. campanulate, 3-cleft, superior. Cor. 0. Sta. inserted on base of style. Anthers on the inner side of the filament. Caps. of 6 cells. *Dwarf, creeping, perennial plants, with simple, broad L. and solitary, stalked Fl.* Aristolochiæ. Sarmentaceæ of Linn. p. 324.

150. **PEGANUM.** Sep. 5, inferior. Pet. 5. Caps. of 3 valves and 3 cells, many-seeded. *Perennial, erect, branched, with the habit of* Nigella. Rutaceæ. p. 72.

246. **PORTULACA.** Cal. usually 2-cleft, superior. Pet. 5. Stigmas 5. Caps. of 1 cell, circumsciss,. Portulacaceæ. p. 129.

239. **LYTHRUM.** Cal. 12-cleft, inferior. Pet. 6, growing on the calyx. Caps. of 2 cells and many seeds. *Perennial plants, with square stems and simple L.* Lythrareæ. p. 127.

II. DIGYNIA. Rosaceæ.

213. **AGRIMONIA.** Cal. with 5 teeth, with a calycle of 2 bracts, and with hooked prickles. Pet. 5, on the calyx. Seeds 1–3, in the bottom of the hardened calyx. *Perennial plants, with divided L. Stip. united to L.-stalk.* p. 120.

III. TRIGYNIA. Resedaceæ.

100. **RESEDA.** Cal. 4–6-parted. Pet. 4–6, unequal; upper laciniate. Caps. of 1 cell, gaping at the top. Seeds numerous. Number of Sta. uncertain. *L. alternate, pinnate, or undivided.* p. 41.

101. **ASTROCARPUS.** Cal. 4–6-parted. Pet. 4–6, unequal; upper laciniate. Follicles 4–6: one or two Seeds in each. *Habit of* Reseda. p. 42.

IV. PENTAGYNIA. Ficoideæ. Caryophyllei of Linn.

264. **GLINUS.** Sep. 5. Pet. 0. Cloven bristles mixed with the stamens. Caps. superior, of 5 cells and many seeds, joined by a thread to the central column. p. 135.

V. DODECAGYNIA. CRASSULACEÆ.

261. **SEMPERVIVUM.** Cal. 12-parted. Pet. 8–12. Caps. 12. Seeds many. *Very succulent, perennial. L. simple, forming rosettes.* p. 134.

XII. ICOSANDRIA.

I. MONOGYNIA.

A. *Fl. superior.*

266. **OPUNTIA.** Cal. tiled, growing on the germen. Pet. many. Berry umbilicate, of one cell and many seeds. *The European species are formed of thick leaves growing one from the other instead of on a stem, and the Fr. from the margin of the L.* CACTEÆ. p. 135.

241. **PHILADELPHUS.** Cal. 4–5-parted. Pet. 4–5. Caps. of 4–5 cells. Seeds numerous, enveloped in a membrane. *A handsome deciduous Shrub.* PHILADELPHEÆ. HESPERIDEÆ of Linn. p. 128.

242. **MYRTUS.** Cal. 4–5-cleft. Pet. 4–5. Berry of 1–3 cells and as many seeds. *A beautiful evergreen Shrub.* MYRTACEÆ. p. 129.

226. **PUNICA.** Cal. campanulate, coloured, fleshy, 5-cleft. Pet. 5. Pome divided horizontally into 2 chambers, of which the upper is subdivided into 5–7 cells, and the lower into 3. Seeds enveloped in a pellucid pulp. GRANATEÆ. p. 125.

B. *Fl. inferior. Cal.* 5-*cleft. Pet.* 5. *Drupe fleshy.* ROSACEÆ.

203. **AMYGDALUS.** Nut with scattered pores. *Trees, or Shrubs, with alternate L.* p. 111.

204. **PRUNUS.** Nut smooth, furrowed on the margin, and with a prominent suture. *Trees, or Shrubs, with simple alternate L. Plum.* p. 111.

II. PENTAGYNIA. 2–5 STYLES.

A. *Cal.* 5-*cleft. Pet.* 5. *Fr. a pome, inferior,* edible. ROSACEÆ. POMACEÆ of Linn.

219. **CRATÆGUS.** Pome containing 1–5 bony cells: top contracted and hollowed. *Thorny Shrubs.* p. 123.

220. **COTONEASTER.** Pome containing 3–5 bony cells, which adhere to the fleshy calyx, and separate at the top. *A humble Shrub, with entire L.* p. 124.

221. **ARONIA.** Pome containing 5, very thin, membranous cells, each imperfectly subdivided. Pome 3–5-seeded. *L. entire. A small ornamental Tree.* p. 124.

222. **MESPILUS.** Pome containing 4–5 bony cells: top dilated to nearly the width of the Fr. Segm. of Cal. leaf-like, persistent. *Medlar.* p. 124.

223. **PYRUS.** Pome containing 2–5 cartilaginous cells, each with 1 or 2 seeds. *As in* Mespilus, *the wild plant sometimes becomes thorny. L. mostly undivided.* p. 124.

224. **CYDONIA.** Pome containing about 5 cartilaginous cells. Seeds numerous. *Quince.* p. 124.

225. **SORBUS.** Pome containing 5, thin, membranous cells, not at all divided. Seeds of Pome 1–5. *Bert. attributes to the species of this genus coriaceous cells. Bab. joins them to* Pyrus, *describing the cells as cartilaginous. I have followed Koch.* p. 124.

B. *No Pome. Caps. many, superior, each with many seeds.* ROSACEÆ.

205. **SPIRÆA.** Cal. 5-cleft. Pet. 5. Caps. of 2 membranous valves, superior. p. 112.

C. *Fr. superior, single. Corolla* 0. FICOIDEÆ.

263. **AIZOON.** Cal. 5-parted, persistent, coloured within. Fr. pentagonal, with 5 cells and many seeds. p. 135.

D. *Caps. inferior, fleshy, many-seeded.* Ficoideæ.

262. **MESEMBRYANTHEMUM.** Cal. 5-cleft. Pet. numerous, cohering at the base. p. 135.

III. POLYGYNIA. Rosaceæ.

206. **DRYAS.** Cal. 8–10-cleft. Segm. nearly equal, and in a single series. Pet. 5–8. Seeds each with a long, feathery tail. *L. undivided. Fl. white.* p. 112.

207. **GEUM.** Cal. 10-cleft: Div. in 2 series; the outer much smaller. Pet. 5. Style lengthening and forming a tail to the seed. *Perennial Herbs, with somewhat lyrate L.* p. 112.

208. **RUBUS.** Cal. 5-cleft. Pet. 5. Berry compound, each part with one seed. *Weak, shrubby plants, mostly with digitate L.; a few with pinnate or with simple L.* p. 113.

209. **FRAGARIA.** Cal. 10-cleft. Pet. 5. Seeds naked, on the surfaces of a pulpy, deciduous receptacle. *Herbs, with ternate L., trailing runners, short, erect flowering-stems, and edible Fr.* p. 116.

210. **COMARUM.** Cal. 10-cleft. Pet. 5. Seeds naked, on a persistent, spongy, and at last somewhat fleshy receptacle. *A bog plant, with digitate L. and purple Fl.* p. 117.

211. **POTENTILLA.** Cal. 8–10-cleft. Pet. 4–5. Seeds naked. Receptacle dry, permanent. *L. digitate in most species. A few are Shrubs. Fl. yellow or white.* p. 117.

218. **ROSA.** Cal. 5-cleft, with a thick tube, which is finally pulpy, and encloses the hispid seeds. Pet. 5. *Weak, bending Shrubs, with pinnate L.* p. 121.

XIII. POLYANDRIA.

I. MONOGYNIA.

A. *Petals 4, not spurred, inferior.*

19. **ACTÆA.** Sep. 4, caducous. Berry of 1 cell. Seeds flat, depressed, in two vertical rows. *Fetid, poisonous Herbs, with divided L., and a raceme of white Fl.* Ranunculaceæ. p. 10.

96. **CAPPARIS.** Sep. 4, coriaceous. Sta. long. Pod stalked, berry-like, 1-celled. *Weak Shrubs, with undivided L.* Capparideæ. p. 33.

27. **PAPAVER.** Sep. 2. Pet. crumpled. Caps. of 1 cell, opening by pores under the sessile stigma. *Herbs, with a milky narcotic sap. L. divided. Fl. fugacious.* Papaveraceæ. p. 12.

28. **MECONOPSIS.** Sep. 2. Caps. obovate, opening by pores beneath the apex. Stigmas on a short style, radiating, free. *Plant similar to* Papaver. Papaveraceæ. p. 12.

29. **GLAUCIUM.** Sep. 2. Pod of 2 or 3 cells. Seeds dotted. *Annual or biennial, with fetid yellow sap, divided L., and large Fl.* Papaveraceæ. p. 12.

30. **CHELIDONIUM.** Sep. 2. Pod of 1 cell and 2 valves. Seeds many, crested. *Perennial, with yellow sap. L. divided. Fl. yellow.* Papaveraceæ. p. 12.

B. *Petals 5.*

137. **TILIA.** Cal. 5-parted, caducous. Caps. (of 5 cells, each with 2 seeds, D.C.; 5 cells and 5 seeds, Lois.) often reduced to 1 cell and 1 seed by abortion. *Handsome, spreading Trees, with simple cordate L.* Tiliaceæ. p. 65.

97. **CISTUS.** Sep. 5; the 2 outer smaller. Caps. 5–10-celled. *Low Shrubs, with opposite L., and with abundance of large fugacious Fl.* Cistineæ. p. 34.

98. **HELIANTHEMUM.** Sep. 3, with often 2 smaller external ones. Pet. crumpled in

the bud. Caps. of 1 cell and 3 valves. *Weak plants, but mostly somewhat woody. A few of them are annual.* Cistineæ. p. 35.

Delphinium **A.**

C. *Petals numerous.* Nymphæaceæ.

25. **NYMPHÆA.** Rec. produced so as in a great measure to cover the germen. Sep. 4, coloured on inner surface. Pet. large, in several rows. Berry of many cells, each with many seeds. *Large aquatic Herbs, with floating, heart-shaped L.* p. 11.

26. **NUPHAR.** Rec. confined to base of germen. Sep. 5 or 6, coloured. Pet. much smaller than calyx, furrowed on the back. *Cal. and Cor. yellow. L. heart-shaped, floating.* p. 11.

II. OLIGOGYNIA. Styles 2–6.

A. *Seed-vessel single.*

265. **REAUMURIA.** Sep. 5, awned. Pet. 5, reflexed, furnished with crenate scales at the base. Caps. superior, with 5 valves and 5 cells. *A tufted Shrub, with small L., and an appearance something like that of* Salicornia fruticosa. Ficoideæ. p. 135.

740. **STRATIOTES.** Sheath 2-parted, containing 1 flower. Cal. trifid. Pet. 3. Berry inferior, of 6 or more cells. *An aquatic plant, with long, radical, simple, rigid, prickly L. Fl. from root.* Hydrocharideæ. p. 345.

B. *Seed-vessels as many as styles, but sometimes united for nearly their whole length, bursting internally, many-seeded.* Ranunculaceæ.

i. *Anthers opening towards the pistils. Fl. with calyx and corolla.*

20. **CIMICIFUGA.** Sep. 4, caducous. Cor. of 4 petals, nectariferous at base. Carpels 4, dry. *A fetid Herb. L. ternate or twice ternate.* p. 10.

21. **PÆONIA.** Sep. 5, persistent. Pet. 5. Follicles 2–6, recurved. *Splendid Perennials, with fleshy roots and compound L.* p. 10.

ii. *Anthers opening from the pistils. Outer Perigone forming a corolla, within which are one or more petals or nectaries.*

a. *Flowers regular.*

14. **GARIDELLA.** Div. of Perigone 5. Nectaries 5, 2-lipped. Germens 3, united. Styles very short. *L. finely divided.* p. 8.

15. **NIGELLA.** Div. of Perigone 5. Nectaries 5–10, 2-lipped. A nectariferous hollow at the base, covered by a scale. Carpels 5, connected. Styles long. *Annuals, with finely divided L.* p. 8.

16. **AQUILEGIA.** Div. of Perigone 5, all alike. Nectaries 5, funnel-shaped, spurred at base. Carpels 5, erect. *L. ternate. Fl. few, drooping, in a terminal panicle.* p. 8.

b. *Flowers irregular.*

17. **DELPHINIUM.** Div. of Perigone 5; one with a spur. Two of the Nectaries spurred, sessile, included in the spur of the perigone. Style short. Follicles 1–5. *L. finely divided. Fl. in racemes, with bracts to Fl.-stalks.* p. 8.

18. **ACONITUM.** Div. of Perigone 5; uppermost hooded. Nectaries 2, stalked, recurved under the hood of upper petal. Carpels 3–5. *Erect, perennial, with divided L., and a terminal Rac. or Pan. of numerous Fl.* p. 9.

III. POLYGYNIA. Ranunculaceæ.

A. *Capsules or Follicles several, each with many seeds. Perigone single.*

13. **ISOPYRUM.** L. of Perigone 5, caducous. Nectaries 5, contracted into a hood below or 2-lipped; outer lip 2-lobed, shorter. *A small plant, with ternate L.* p. 8.

12. **HELLEBORUS.** L. of Perigone 5, persistent. Nectaries 5–12, tubular. *Coarse plants, with simply ternate, palmate, or pedate L.* p. 8.

11. **ERANTHIS.** L. of Perigone 5–8, caducous. Nectaries 5–8, tubular, very short. Carpels stalked. A divided Involucrum below the *yellow* Fl. p. 8.

10. **TROLLIUS.** L. of Perigone 5–15, deciduous. Nectaries 9–12, linear, slightly tubular at base. *Habit of* Ranunculus. p. 8.

9. **CALTHA.** L. of Perigone 5 or more. Nectary 0. *Marsh plants, with broad undivided L. and showy yellow Fl.* p. 8.

B. *Carpels* 1-*seeded, not splitting.*

i. *Cal. imbricate in the bud. Perigone simple, corolla-like.*

4. **ANEMONE.** Invol. 3-leaved. Div. of Perigone 5–20. Carpels numerous, on an enlarged conical or hemispherical receptacle. *Root tuberous. Stem* 0. *L. compound or divided. Fl. large and handsome.* p. 2.

3. **THALICTRUM.** Invol. 0. Div. of Perigone 4–5. Carpels not numerous, on a small disc. *Stem branched. L. compound. Fl. insignificant.* p. 1.

ii. *Fl. with calyx and corolla.*

8. **RANUNCULUS.** Sep. 5. Pet. 5 or more, with a nectariferous pore or scale at the base of each. Carpels without tails. *Perennial Herbs.* p. 4.

7. **CERATOCEPHALUS.** Sep. 5. Claw of Pet. with a nectariferous hollow. Sta. 5 or more. Carpels with 2 empty cells! *Small Annuals. L. much divided.* p. 4.

6. **MYOSURUS.** Sep. 5, spurred at base. Pet. 5, with a long, tubular claw. Sta. 5–15. Recept. of Seeds cylindrical. *A small Annual. Scape* 1-*flowered. L. linear.* p. 4.

5. **ADONIS.** Sep. 5. Pet. 5–10, without a nectary. Carpels angular, rugged, without tails. *Annuals. L. finely divided.* p. 3.

2. **ATRAGENE.** Sep. 4, coloured. Pet. numerous, smaller than sepals. p. 1.

1. **CLEMATIS.** Pet. 0. Tail of Carpels feathered. *This and the preceding are mostly trailing Shrubs, with opposite L.* p. 1.

XIV. DIDYNAMIA.

I. GYMNOSPERMIA. Labiatæ. Verticillatæ of Linn.

The following Tribes are from Bentham's Labiatæ:—

1. Ocymoideæ. Sta. bent down, enclosed in tube of bilabiate corolla. Gen. 620.

2. Menthoideæ. Sta. porrect or divergent. Cor. in 4 nearly equal divisions. Gen. 621–624. *Lycopus*, belonging to this tribe, is diandrous. In the 'Prodromus' Bentham has joined this tribe and the fifth to the *Satureineæ*.

3. Monardeæ. Sta. ascending. Anthers cohering in pairs. Gen. 625–628.
This character belongs to *Horminum*, the only European genus here introduced, since placed by Bentham among the anomalous genera of the *Stachydeæ*. *Salvia*, *Rosmarinus*, and *Zizyphora*, belonging to this tribe, are diandrous.

4. Satureineæ. Cor. ringent. Sta. porrect or divergent, equal, or the upper shorter. Anthers free. Gen. 629–633.

5. Melissineæ. Sta. ascending. Anthers free; upper shorter. Cal. 13-nerved. Cor. without a ring. Gen. 634–637.

6. Scutellarineæ. Sta. parallel, ascending. Anthers free. Lips of Cal. pressed together and closed on the Fr.! Upper Lip truncate. Gen. 638–640.

7. Nepeteæ. Sta. ascending. Anthers free; upper exceeding lower. Cal. 15-nerved. Gen. 641–643.
8. Stachydeæ. Sta. ascending. Anthers free; lower exceeding upper. Cal. 5- or 10-nerved. Gen. 644–655.
9. Prasieæ. Fr. fleshy! Gen. 656.
10. Ajugeæ. Upper Lip. of Cor. apparently wanting! Seeds wrinkled. Gen. 657, 658.

Tribe I. *OCYMOIDEÆ.*

620. **LAVANDULA.** Cal. nearly equal; upper Tooth expanded in the European species. *Shrubs, with Fl. in terminal spikes.* p. 282.

Tribe II. *MENTHOIDEÆ.*

621. **ELSHOLTZIA.** Cal. with 5 teeth, naked within. Border of Cor. short, slightly two-lipped. *Spike and Floral L. broadly ovate, secund.* p. 283.

622. **PRESLIA.** Cal. of 4, nearly equal, awned teeth, somewhat villous within. Sta. equal, distant. *Herbaceous, prostrate, perennial.* p. 283.

623. **MENTHA.** Cal. regular, 5-cleft. Tube of Cor. included. Sta. equal, distant. *Herbs loving moisture.* p. 283.

624. is *Lycopus.*

Tribe III. *MONARDEÆ.*

625. *Salvia.* 626. *Rosmarinus.* 627. *Zizyphora.*

628. **HORMINUM.** Cal. 2-lipped. Cor. with a hairy ring at the mouth: tube exceeding calyx; upper lip truncate, emarginate; lower with 3 short, rounded lobes. p. 286.

Tribe IV. *SATUREINEÆ.*

629. **ORIGANUM.** Cal. of 5, nearly equal teeth: throat villous. Fl. in a strobilus; the broad, coloured Bracts covering the calyces. p. 287.

630. **MAJORANA.** Cal. campanulate, very short: border cloven; upper part rounded and very entire; the margin folded underneath at the base. Throat naked. Fl. in a strobilus, with rounded, villous bracts, not coloured. p. 287.

631. **SATUREJA.** Cal. of 5 nearly equal teeth, 10-nerved. Whorls axillary, or connected into an oblong head, but not accompanied by broad bracts. Upper Lip of Cor. ovate. *Aromatic, with small, entire L.* p. 287.

632. **HYSSOPUS.** Cal. of 5 teeth, 15-nerved: mouth somewhat oblique. Lower Lip of Cor. tripartite; the middle lobe largest. *Woody.* p. 287.

633. **THYMUS.** Cal. two-lipped, 1–3-nerved: throat villous. Upper Lip of Cor. straight, nearly flat, emarginate. *Small aromatic Shrubs. L. small, quite entire, generally pitted beneath.* p. 287.

Tribe V. *MELISSINEÆ.*

634. **MICROMERIA.** Cal. with 5 nearly equal teeth. Tube of Cor. shorter than calyx. *Small, shrubby.* p. 288.

635. **CALAMINTHA.** Cal. 2-lipped: throat villous. Tube of Cor. exceeding calyx. Fil. expanding at top into a connective. Fl. without involucrum. *Perennial, herbaceous, except in* C. microphylla. p. 289.

636. **CLINOPODIUM.** Cal. 2-lipped: throat hardly villous. Fil. expanded at top into a connective. Fl. in globose, involucrate whorls. *Herbaceous.* p. 289.

637. **MELISSA.** Cal. 2-lipped. Tube of Cor. exsert. Cells of Anthers not separated by a connective. *Herbaceous.* p. 289.

Tribe VI. *SCUTELLARINEÆ.*

638. **SCUTELLARIA.** Fil. simple. Lips of Cal. entire; upper with a scale on the back. Cor. with a long tube, naked within. *Herbaceous. Fl. axillary, solitary.* p. 290.

639. **PRUNELLA.** Fil. cloven; one branch barren. Upper Lip of Cal. flat, truncate, with 3 short teeth; lower cloven. Tube of Cor. broad, with an internal ring of short hairs or scales. Style cloven. *Herbaceous. Floral L. imbricate.* p. 290.

640. **CLEONIA.** Fil. cloven. Upper Lip of Cal. flat, truncate, with 3 short teeth; lower cloven. Tube of Cor. slender, naked within. Style quadrifid. *Habit of* Prunella. p. 290.

Tribe VII. *NEPETEÆ.*

641. **NEPETA.** Cal. with 5, nearly equal teeth; the upper slightly larger. Bracts entire. Cells of Anthers opening in a continued line. *Herbaceous.* p. 290.

642. **GLECHOMA.** Cal. with 5 nearly equal teeth. Opening of Cells bent in a right angle; each pair of Anthers forming a cross. Floral L. like the others. *Herbaceous.* p. 291.

643. **DRACOCEPHALUM.** Cal. 2-lipped or with the upper teeth very large. Fl. large; the throat very open. Bracts broad, with subulate teeth. p. 291.

Tribe VIII. *STACHYDEÆ.*

A. *Stamens exsert.*

i. *Cal.* 2–4-*lobed, inflated after flowering, irregularly veined.*

644. **MELITTIS.** Tube of Cor. wide, exceeding calyx. Upper Lip nearly flat. Anthers converging, forming two crosses. *A handsome herbaceous plant.* p. 291.

ii. *Cal. regular, with* 5 *teeth, not abruptly expanded at top.*

645. **GALEOPSIS.** Cells of Anthers separating into distinct valves; the inner valves smaller, bearded, and placed back to back! Lower Lip of Cor. with 2 conical prominences, hollow beneath. *Annuals. All L. nearly similar.* p. 291.

646. **LAMIUM.** Cells of Anthers bursting on one side. Lateral Div. of Lower Lip of Cor. reduced to 1 or 2 teeth, or wanting. Upper Lip vaulted. Throat dilated. Ring direct. *Herbaceous. Bracts few. Lower L. on long stalks. A peculiar smell runs through the whole genus.* p. 292.

647. **GALEOBDOLON.** Cells of Anthers bursting on one side. Div. of Lower Lip of Cor. 3, nearly equal, acute; upper lip vaulted. Ring oblique. Upper Teeth of Cal. erect, somewhat separate. p. 292.

648. **LEONURUS.** Cells of Anthers bursting laterally. Div. of Lower Lip of Cor. obtuse; upper lip shaggy, nearly flat. Seeds truncate. *Erect Herbs. Floral L. narrower.* p. 292.

649. **STACHYS.** Cells of Anthers diverging, bursting laterally. Div. of Lower Lip of Cor. obtuse; upper lip concave. Throat with a hairy ring. Anthers twisting outwards after flowering. p. 293.

650. **BETONICA.** Like *Stachys,* but the cells of the Anthers are parallel, *and, except in* B. alopecurus, *there is no hairy ring in the throat of the corolla.* p. 294.

651. **PHLOMIS.** Upper Fil. adnate to corolla, prolonged into an appendage at the base! Upper Lip *hairy,* compressed. Cal. angular, nearly truncate, or with 5 short spreading teeth. *Plants shrubby. L. wrinkled.* p. 294.

iii. *Cal. regular, with* 10 *furrows at the base, somewhat abruptly expanded at the top, and veined.*

652. **BALLOTA.** Upper Lip of Cor. vaulted, shaggy. Tube with a hairy ring. *Perennial Herbs, with cordate L., and a disagreeable smell.* p. 295.

iv. *Cal. irregular, very broad and open: teeth spinescent.*

653. **MOLUCCELLA.** Cal. obliquely campanulate, veiny, with 5 or 10 points. Cor. with an oblique internal ring. Tube shorter than calyx. *Smooth Annuals.* p. 295.

B. *Sta. included in the tube of the corolla.*

654. **MARRUBIUM.** Div. of Style filiform, nearly equal. Cal. with 10 furrows and 5 or 10 teeth. Upper Lip of Cor. straight, linear, cloven. Tube included in calyx. p. 295.

655. **SIDERITIS.** Lower Div. of Style dilated at base, and embracing the upper. p. 296.

In S. romana *the upper Tooth of the Cal. is much larger than the others; in* S. montana *the upper Teeth are partially united.*

Tribe IX. *PRASIEÆ.*

656. **PRASIUM.** Cal. 10-nerved, irregularly 2-lipped: segments ovate, leaf-like. Tube of Cor. included, with a scaly internal ring, *shrubby.* p. 296.

Tribe X. *AJUGEÆ.*

657. **TEUCRIUM.** Upper Lip of Cor. divided to the base: tube short, without a ring. *A genus very various in general appearance.* p. 296.

658. **AJUGA.** Upper Lip of Cor. minute, abrupt, emarginate. p. 297.

II. ANGIOSPERMIA.

All this order belongs to the Personatæ *of Linnæus, except* Celsia, Digitalis, Limosella, *and* Linnæa. *The last-mentioned genus differs from all the rest in having an inferior germen.*

A. Seeds two or four; connected, at least at first, by a common covering.

B. Seeds many, on a central placenta.

- **i.** Cells of Seed-vessel 2.
  - **a.** Fl. nearly regular.
  - **b.** Fl. ringent. Cal. 5-cleft.
  - **c.** Fl. ringent, reversed, with an accessory scale. Cal. 4-cleft.
  - **d.** Fl. ringent, direct; no Accessory Scale. Cal. 4-cleft.
- **ii.** Cell of Seed-vessel single.

C. Seeds many, on the valves. Cell single.

D. Germen inferior!

A. *Seeds 2–4; connected, at least at first, in a common covering.*

617. **VITEX.** Cal. with 5 teeth. Cor. 2-lipped: tube slender. Fr. a drupe, containing a 4-celled nut. Verbenaceæ. p. 282.

618. **VERBENA.** Cal. of 5 teeth: one of them shorter. Border of Cor. in 5 slightly unequal segments. Sta. included in the tube. Seeds 4, connected by an evanescent membrane. Verbenaceæ. p. 282.

619. **ZAPANIA.** Cal. cloven. Cor. *small,* 2-lipped. Caps. of 2 cells, each with a single seed. *A low marsh plant, with stalked heads of Fl. and large bracts.* Verbenaceæ. p. 282.

616. **ACANTHUS.** Sep. 4, differing in form and size. Cor. of one lip, trifid. Fr. a capsule of 2 cells. Dissepiment contrary to valves. Placenta central. Acanthaceæ. p. 282.

612. **MELAMPYRUM.** Cal. 4-cleft. Cor. ringent: upper lip folded back on margin; lower with three furrows. Scrophulariaceæ. p. 272.

613. **TOZZIA.** Cal. 5-cleft. Cor. salver-shaped: the Tube dilated upwards; Div. nearly equal. Germen with 2 cells and 2 ovules in each. Seed 1. Scrophulariaceæ. p. 273.

597. **SIBTHORPIA.** Cal. with 5 deep spreading segments. Cor. rotate, irregularly 5-cleft. Caps. compressed. *A very humble plant, with rounded L.* Scrophulariaceæ. p. 266.

B. *Seeds many, on a central placenta.*

i. *Cells* 2.

a. *Fl. nearly regular.*

590. **CELSIA.** Cor. rotate, 5-lobed; the 2 upper Segm. somewhat smaller. Longer Stamens bearded. *A* Verbascum, *except for the number of its stamens.* SOLANACEÆ. p. 262.

599. **ERINUS.** Cor. salver-shaped, somewhat 2-lipped; Segm. emarginate. Valves of Caps. bent in the middle. SCROPHULARIACEÆ. p. 266.

601. **DIGITALIS.** Cor. campanulate, ventricose at base. Margin oblique, with 4 or 5 shallow lobes. *Upright plants, with alternate L. and terminal Rac. of Fl.* SCROPHULARIACEÆ. LURIDÆ of Linn. p. 267.

b. *Fl. ringent. Cal.* 5-*cleft.* SCROPHULARIACEÆ.

611. **PEDICULARIS.** Cor. not unequal at base; upper Lip compressed. Seeds reticulate or pitted. *Perennial marsh plants, with pinnatifid L., turning black in drying.* p. 271.

594. **LINARIA.** Cor. spurred at base. Mouth closed, or nearly so, with a prominent palate. Cells opening by a pore with one or more valves. *Habit various.* p. 264.

593. **ANTIRRHINUM.** Cor. gibbous at base: mouth closed with a bearded palate. Cells of Caps. opening by one or two pores. *Lower L. usually opposite; upper alternate.* p. 263.

592. **ANARRHINUM.** Cor. gibbous at base; mouth open. Cells of Caps. equal, opening on the back by a pore with a single valve. *Root-L. in rosettes. Stem-L. alternate.* p. 263.

c. *Fl. ringent, reversed. Cal.* 4-*cleft.* SCROPHULARIACEÆ.

591. **SCROPHULARIA.** Tube of Cor. inflated; an additional scale within the upper lip. Caps. opening by 2 valves with inflexed margins. p. 262.

d. *Fl. ringent, direct, without additional scale. Cal.* 4-*cleft.* SCROPHULARIACEÆ.

604. **EUFRAGIA.** Teeth of Cal. nearly equal. Cells of Anthers awned. Seeds numerous, finely striate, but without wings or prominent ribs. p. 269.

606. **TRIXAGO.** Teeth of Cal. nearly equal. Cells of Anthers awned. Placentas thick and cloven. Seeds very small, with longitudinal ribs. p. 270.

606. **EUPHRASIA.** Teeth of Cal. nearly equal. Upper Lip of Cor. spreading, trifid. Cells of Anthers awned. Placentas thin. Seeds small, pendulous, with longitudinal ribs. p. 270.

607. **ODONTITES.** Teeth of Cal. nearly equal. Upper Lip of Cor. concave, nearly entire. *Cells of Anthers awned.* Placentas thin. Seeds small, pendulous, with longitudinal ribs. p. 270.

608. **BARTSIA.** Teeth of Cal. nearly equal. Upper Lip of Cor. concave, nearly entire. *Cells of Anthers awned.* Placentas thin. Seeds small, transverse: the ribs winged. p. 270.

609. **RHINANTHUS.** Cal. inflated. Teeth nearly equal. Upper Lip of Cor. compressed. Margin of Seeds winged. Caps. compressed, acuminate. p. 270.

610. **RHYNCHOCORYS.** Cal. compressed: upper Lip nearly entire; lower bipartite. Upper Lip of Cor. prolonged into a slender beak. Seeds globose, wrinkled. p. 271.

ii. *Cell single.* SCROPHULARIACEÆ.

596. **LINDERNIA.** Cal. 5-parted. Cor. ringent. (Two of the Fil. with a short, glandular appendage at base. BENTH.) (Anthers of lower Fil. lateral, BERT.) *A small annual marsh plant.* p. 266.

598. **LIMOSELLA.** Cal. 5-cleft. Cor. between rotate and campanulate, 5-cleft. A thin and imperfect Dissepiment parallel to the valves of capsule. *A small marsh plant, with entire L.* PRECIÆ of Linn. p. 266.

C. *Seeds on the margin of the valves, numerous. Cell single.* OROBANCHEÆ.

614. **OROBANCHE.** Sep. 1 or 2, somewhat irregular. Cor. ringent, permanent. *Brown, fleshy, parasitical, leafless plants. Scape scaly.* p. 273.

615. **LATHRÆA.** Cal. 4-cleft: segments nearly equal. Cor. ringent, caducous. *Parasitic plants, with a branched, subterraneous, scaly, or leafy stem; the Fl. rising above ground.* p. 281.

D. *Germen inferior!* CAPRIFOLIACEÆ.

365. **LINNÆA.** Cor. campanulate, 5-cleft, calycled. p. 163.

XV. TETRADYNAMIA. CRUCIFERÆ.

The Orders and Tribes which I adopt are:—

I. SILICULOSÆ.

1. THLASPIDEÆ. Angustisept; *the partition between the cells being on the shorter diameter of the compressed pouch.* Cotyledons accumbent; *i. e., the Radicle bent along the edges of the cotyledons.* Gen. 35–38.
2. LEPIDINEÆ. Like the preceding, except that the cotyledons are incumbent; *i. e., the Radicle is turned up on the back of one of the cotyledons.* Gen. 39–45.
3. ALYSSINEÆ. Latisept; *the partition between the cells being on the longer diameter of the compressed pouch.* Cotyledons accumbent. Gen. 46–57.
4. CAMELINEÆ. Differs from the last in having the cotyledons incumbent. Gen. 58.
5. VELLEÆ. Latisept. Cotyledons folded laterally. Gen. 59, 60.
6. NUCAMENTACEÆ. Silicle falling off entire! Gen. 61–67.

II. SILIQUOSÆ.

7. LOMENTACEÆ. Seeds placed one above another; but the Pod not splitting longitudinally, and without a vertical dissepiment. Gen. 68–72.
8. BRASSICEÆ. Cotyledons folded. Gen. 73–78.
9. SISYMBRIEÆ. Cotyledons incumbent. Gen. 79–86.
10. ARABIDEÆ. Cotyledons accumbent. Gen. 87–95.

I. SILICULOSÆ.

Tribe 1. *THLASPIDEÆ.*

35. **BISCUTELLA.** Silicle of 2 circles, *which fall off separately*, each containing one seed. *L. more or less divided, generally rough. Fl. yellow.* p. 14.

36. **IBERIS.** Silicle oval (inversely heart-shaped, SM.). Fil. not toothed. Two outer Pet. largest. Cells one-seeded. Sep. alike. *Fl. white or purplish.* p. 14.

37. **TEESDALIA.** (Silicle inversely heart-shaped, SM.) Longer Fil. each with a scale at the base. Seeds 2 in each cell. *Small plants, with pinnate L., nearly naked stems, and minute white Fl.* p. 15.

38. **THLASPI.** Silicle inversely heart-shaped. Valves with a bordered keel. Seeds 2 or more in each cell. Sep. alike. *Fl. small, white. Fr. in lax racemes.* p. 15.

Tribe II. *LEPIDINEÆ.*

39. **HUTCHINSIA.** Silicle nearly entire. Valves keeled, but without a border. Fil. simple. Seeds 2–4 in each cell. *Some of the species appear to have incumbent cotyledons.* p. 16.

40. **CAPSELLA.** Silicle inversely triangular. Valves not bordered. Fil. without teeth. Seeds numerous. p. 16.

41. **LEPIDIUM.** Silicle elliptic, emarginate. Valves keeled. Cells 1-seeded. Fil. without teeth. Sep. equal. Pet. equal, *white.* p. 16.

42. **BIVONEA.** Silicle oval, emarginate. Valves winged. Seeds 2–6. *L. undivided; upper somewhat cordate. Fl. yellow.* p. 17.

43. **ÆTHIONEMA.** Silicle oval. Valves boat-shaped. Keel winged. Seeds 2 or more in each cell. Fil. without teeth. Two Sep. gibbous at base. Pet. nearly equal. *Fl. in a corymb. Fr. in a raceme.* p. 17.

44. **SUBULARIA.** Silicle entire. Valves tumid. Seeds numerous. Cotyledons linear, doubled in themselves. *A humble plant, mostly under water.* p. 17.

45. **SENEBIERA.** Silicle wrinkled, not splitting. Cells 1-seeded. Cotyledons linear, doubled in themselves. p. 17.

Tribe III. *ALYSSINEÆ.*

A. *Silicle nearly as thick as broad.*

46. **COCHLEARIA.** Fil. toothless. Pouch nearly entire, turgid, wrinkled. Seeds numerous. *Scurvy-grass.* p. 17.

47. **VESICARIA.** Shorter Fil. with an obtuse tooth at base. Seeds numerous. *Hairy, and somewhat woody plants.* p. 18.

B. *Silicle compressed.*

i. *Shorter Fil. with a tooth or wing.*

48. **FARSETIA.** Silicle entire, flat. Cal. bisaccate. Seeds with a broad border; more than 4 ovules in a cell. *Stem erect. Cor. at first yellow, but becoming white.* p. 18.

49. **AUBRIETIA.** Silicle entire. Valves very convex. Seeds without a border, more than 4 in a cell. Cal. bisaccate. *Forms cushions. Fl. lilac.* p. 18.

50. **BERTEROA.** Silicle entire. Seeds with a very narrow margin. Sepals alike. Pet. cloven. Shorter Fil. toothed. *Plants with stellate hairs. L. undivided.* p. 18.

51. **ALYSSUM.** Silicle entire. (Valves flat, or with a convex centre, DC.) Sepals alike. Pet. entire. *Seeds* 1–4 *in each cell. L. undivided.* p. 18.

ii. *Fil. all simple.*

52. **KONIGA.** Silicle oval, compressed. Seeds margined, 1 or 2 in each cell, pendulous; stalk attached to dissepiment. *Plant rather woody at base. L. lineari-lanceolate, quite entire.* p. 19.

53. **PETROCALLIS.** Silicle entire. Seeds without a margin, 2 in each cell. Seed-stalk attached to the dissepiment. *Tufted. L. somewhat cuneiform, trifid. Fl. pink.* p. 19.

54. **DRABA.** Silicle entire. Seeds many, without a margin. Seed-stalks free. Sep. equal. Pet. entire. *L. undivided.* p. 20.

55. **LUNARIA.** Silicle stalked (within the calyx). Seeds many, bordered. Seed-stalk attached to dissepiment. Cal. somewhat bisaccate. *Tall, erect, branched plants. Fl. purple.* p. 21.

C. *Seed-vessel with only* 1 *cell!*

56. **PELTARIA.** Seeds 1–4. Silicle not opening, surrounded by a filiform margin, flat. Fil. toothless, *smooth. L. sagittate. Fl. white.* p. 21.

57. **CLYPEOLA.** Silicle with a flat margin, not opening. Seed solitary. Fil. alato-dentate. Sep. equal. Pet. entire. *Small Annuals, with stellate pubescence, and minute yellow Fl.* p. 21.

Tribe IV. *CAMELINEÆ.*

58. **CAMELINA.** Silicle pyriform, very convex. Seeds numerous, not bordered. Style attached to one of the valves. *Stem erect. Stem-L. sagittate.* p. 21.

Tribe V. *VELLEÆ.*

59. **CARRICHTERA.** Sta. separate. Style ovate, flat, leaf-like. *L. bipinnatifid.* p. 21.

60. **SUCCOWIA.** Sta. separate. Style slender, conical. (Stigma radiate, Pers.) Silicle prickly. *L. pinnate, pinnatifid. Fl. yellow.* p. 21.

Tribe VI. *NUCAMENTACEÆ.*

A. *Silicle with 2 cells, placed side by side, each with 1 seed.*

61. **EUCLIDIUM.** Silicle drupe-like, with evident sutures. Style subulate. Cotyledons accumbent. *Fl. small, white, in a sort of spike.* p. 21.

B. *Silicle with 1 cell and 1 seed.*

62. **NESLIA.** Silicle nearly globose. Cotyledons incumbent (*according to Bert., the cotyledons are sometimes accumbent*). *An annual, erect plant, with undivided L. and yellow Fl.* p. 21.

63. **ISATIS.** Silicle tongue-shaped, much compressed, bordered. Seed pendulous, oblong. Cotyledons somewhat channeled. *Fl. small, numerous, yellow.* p. 21.

64. **CALEPINA.** Silicle turgid, leathery. Cotyledons undulato-convolute. Sep. equal. Outer Pet. somewhat larger. The 4 longer Fil. winged at the base. *Plant smooth, branched. Upper L. sagittate.* p. 21.

C. *Silicle with cells (sometimes without seeds) one above the other.*

65. **BUNIAS.** Cells 2, one above the other, or in 2 pairs. Cotyledons truly spiral. *Fl. yellow. The ripe Silicle crested on the angles.* p. 21.

66. **MYAGRUM.** Silicle with 2 empty cells above the fertile. Cotyledons channeled. Seeds pendulous, oblong. *Upper L. sagittate. Pet. yellow.* p. 22.

67. **CRAMBE.** Silicle with an empty stalk-like cell below the fertile. Seed pendulous, on a long stalk. Cotyledons folded. The 4 longer Fil. forked at top. *L. fleshy, cabbage-like. Fl. white.* p. 22.

II. SILIQUOSÆ.

Tribe VII. *LOMENTACEÆ.*

68. **CAKILE.** Pod of 2 joints: lower obovate; upper ensiform, deciduous. Seed in the lower (if present) pendulous; in the upper erect. Cotyledons accumbent. Cal. gibbous. *Fl. white or purplish. Plant fleshy.* p. 22.

69. **RAPISTRUM.** Pod of 2 joints, each with one seed: the lower stalk-like; the upper subglobose, acuminate. Seeds as in *Cakile.* Cotyledons folded. *Lower L. generally pinnatifid or lyrate; upper undivided.* p. 22.

70. **MORISIA,** Bert. Pod of 2 joints, each (except through abortion) of 2 cells and 2 seeds, pendulous in the inferior, erect in the upper cell. Cotyledons incumbent. Two Sep. somewhat gibbous at base. Two subulate Nect., and two filiform. *No Stem. Scape 1-flowered. L. pinnatifid.* p. 22.

71. **ENARTHROCARPUS.** Pod of 2 joints: lower obconical, with 1–3 seeds; upper long, with 9–10 seeds. Cotyledons folded. p. 22.

72. **RAPHANUS.** Pod of several imbedded seeds in a single row, one beyond the other, often forming so many joints. Cotyledons folded. *Annuals. Root fleshy.* p. 22.

Tribe VIII. *BRASSICEÆ.*

73. **SINAPIS.** Cal. spreading (in the flower). Pod nearly cylindrical, somewhat beaked. Seeds globose, *their taste pungent*: those in each cell in a single row. p. 22.

74. **BRASSICA.** Cal. of Fl. erect. Pod nearly cylindrical, somewhat beaked. Valves obtuse, with one nerve and intermediate veins. Seeds nearly globular, in one row. *In most of the species the L. are lyrate; the ultimate divisions forming by far the greater part of the L.* p. 23.

75. **ERUCASTRUM.** Cal. of Fl. erect. Pod linear: Valves convex. Seeds oblong, in a single row. *L. pinnatifid or cuneate. Fl. yellow.* p. 24.

The characters of this and the two preceding genera are very unsatisfactory; and I must confess I have disposed the species rather according to habit than to the somewhat obscure and uncertain artificial characters.

76. **DIPLOTAXIS.** Cal. spreading. Pod compressed: Valves with a single nerve. Seeds imperfectly in two rows. p. 24.

77. **ERUCA.** Cal. spreading, equal at base. Pod terete: Valves with one prominent nerve. Seeds regularly in two rows. *Annual, erect. L. lyrato-pinnatifid.* p. 25.

78. **MORICANDIA.** Cal. of Fl. erect, with two protuberances at base. Pod unequally 4-edged. Seeds in 2 rows, somewhat winged. *Fl. purple.* p. 25.

Tribe IX. *SISYMBRIEÆ.*

A. *Stigma a shield or disc with a thickened margin.*

79. **SISYMBRIUM.** Pod linear: Valves 3-nerved. Seeds in a single series. Seed-stalk filiform. p. 25.

80. **ALLIARIA.** Pod long, terete: Valves 3-nerved. Seeds in a single row. Seed-stalk flattened, winged. *L. undivided, cordate.* p. 26.

81. **ERYSIMUM.** Cal. erect. Pod 4-edged: Valves with a single nerve. Seeds in one row. Seed-stalk filiform. *Upright and somewhat rigid plants, with undivided and generally narrow L.* p. 26.

82. **HUGUENINIA.** Cal. somewhat spreading. Pod 2-edged: Valves each with a single nerve. Seeds in one row. *L. pinnate.* p. 27.

83. **SYRENIA.** Pod 4-edged: Valves each with a single nerve. Seeds in 2 rows. *L. linear, quite entire.* p. 27.

84. **BRAYA.** Pod terete or somewhat compressed: Valves 1-nerved. Seeds in 2 rows. *Fr. in a raceme.* p. 27.

B. *Stigma of 2 oblong or oval lobes.*

85. **HESPERIS.** Pod linear, many-nerved. Seeds in a single row. *L. elliptical or ovato-lanceolate, undivided.* p. 27.

C. *Stigma conical.*

86. **MALCOMIA.** Pod linear, *hairy or woolly.* Seeds in a single row, or somewhat irregular. *L. undivided. Fl. purplish.* p. 28.

Tribe X. *ARABIDEÆ.*

A. *Stigma 2-lobed.*

87. **MATTHIOLA.** Pod terete or somewhat compressed, with 2 or 3 bunches or horns at the top (*in* M. sinuata *this is hardly the case*). Two Sep. gibbous at base. *Fl. purplish.* p. 28.

88. **CHEIRANTHUS.** Pod compressed or 2-edged, with an elevated nerve on each

valve. Lobes of Stigma spreading. Seeds in a single row. Two Sep. somewhat gibbous at base. *Fl. yellowish.* p. 28.

B. *Stigma discoid or capitate.*

89. **BARBAREA.** Pod round and keeled, or somewhat 4-edged. Seeds in one row. *L. more or less lyrate. Fl. yellow.* p. 29.

90. **NASTURTIUM.** Pod round (on the section). Seeds irregularly in two rows. *L. pinnate. Fl. white or yellow. In some species the pod is so short that but for their general resemblance to the rest of the genus they would be placed among the* Siliculosæ. p. 29.

91. **TURRITIS.** Pod compressed, keeled. Seeds in 2 rows. *An upright plant, with cordato-sagittate L.* p. 30.

92. **ARABIS.** Pod compressed, keeled or with numerous longitudinal veins. Seeds in one row. *Root-L. in rosettes. Fl. white, pink, or blue.* p. 30.

93. **CARDAMINE.** Pod compressed, without keel or nerves, at last rolling upwards from the bottom. Seed-stalk filiform. *Fl. white, pink, or purple.* p. 32.

94. **DENTARIA.** Pod as in *Cardamine.* Seed-stalks dilated, winged. Placentas not winged. *Root horizontal. Stem erect. L. pinnate or digitate.* p. 32.

95. **PTERONEURUM.** Pod as in *Cardamine.* Seed-stalks dilated, winged. (Placentas alato-nervose, DC.) *Habit of* Cardamine. p. 33.

XVI. MONADELPHIA.

I. PENTANDRIA. Geraniaceæ.

142. **ERODIUM.** Style 1. Arils 5, each with a single seed. Awns spiral, *bearded on the inside* (*in* E. albiflorum *sometimes smooth.*) Five barren Fil. *Stem L. opposite. Cor. pink or white.* p. 68.

II. DECANDRIA. Geraniaceæ.

143. **GERANIUM.** Arils 5, 1-seeded. Awns spiral, *not bearded.* Sep. 5. Pet. 5, blue, pink, or white. *L. opposite.* p. 69.

III. POLYANDRIA. Malvaceæ.

A. *Calyx double.*

i. *Seeds in a single capsule.*

135. **HIBISCUS.** Caps. of 5 cells. Stigmas 5. Seeds many. Outer Cal. of many L. p. 64.

ii. *Seeds irregularly crowded into a head.*

131. **MALOPE.** Outer Cal. of 3 L. p. 62.

iii. *Seeds, or 1-seeded Caps., whorled.*

132. **MALVA.** Outer Cal of 3 L. p. 62.

133. **ALTHÆA.** Outer Cal. in 6–9 segments. p. 63.

134. **LAVATERA.** Outer Cal. 3-lobed. p. 64.

There is no difference of habit in these three genera.

B. *Calyx simple.*

136. **SIDA.** Style multifid. Caps. *about* 15, *whorled, each containing* 1–3 *seeds, and terminating in two horns.* p. 65.

XVII. DIADELPHIA.

I. HEXANDRIA. Fumariaceæ. Corydales of Linn.

Fil. 2, each with 3 Anthers.

32. **CORYDALIS.** Pet. 4, one with a spur. Pod of 2 valves and many seeds. *L. compound, thin. Fl. in a raceme.* p. 13.

33. **SARCOCAPNOS.** Pet. 4, one with a spur. Caps. not splitting, 2-seeded. Valves 2, three-nerved. p. 13.

34. **FUMARIA.** Cor. ringent, of one petal, protuberant at base. Caps. not splitting, 1-seeded. *Annual. L. supradecompound. Fl. in a raceme.* p. 13.

II. OCTANDRIA. Polygaleæ.

105. **POLYGALA.** Two Segm. of Cal. like wings. Standard of Cor. cylindrical. Caps. of 2 cells and 2 valves. Seeds crested, solitary. *L. smooth, undivided. Plant somewhat woody at base. Fl. in a raceme.* p. 42.

III. DECANDRIA. Leguminosæ.

The plants of this Order with a papilionaceous corolla form the Papilionaceæ *of Linnæus. Those without such a corolla, and one or two genera not belonging to the modern* Leguminosæ, *form his* Lomentaceæ.

A. Stamens all united.
  i. Calyx of 2 L.
  ii. Calyx 2-lipped.
  iii. Calyx of 5 nearly equal teeth.

B. One Stamen separate. Pod continuous, one-celled. *In some species of* Lotus *and* Doryenium, *the shrivelling of a cellular mass occasions the appearance of transverse divisions in the pod.*
  i. L. ternate. Stipules not like additional Lts.
  ii. L. ternate. Stipules like 2 additional Lts.
  iii. L. pinnate, with an odd Lt.
  iv. L. pinnate, without an odd Lt.

C. One Sta. separate. Pod with a longitudinal dissepiment. L. pinnate, with an odd Lt.

D. One Sta. separate. Pod jointed. L. pinnate, with an odd Lt., or simple.

A. *Filaments all united.*

i. *Cal. of 2 L.*

165. **ULEX.** Cal. coloured. Legume oblong, hardly exceeding calyx. Seeds 6–10. *Shrubs, with strong branched thorns and small simple L. Fl. solitary, yellow. Leg. villous.* p. 75.

ii. *Calyx 2-lipped.*

166. **GENISTA.** Upper Lip 2-parted, or bidentate; lower with 3 teeth. Organs not included. Keel obtuse. Leg. without glands. *Shrubs, with simple or ternate L., sometimes spinose. Fl. yellow.* p. 75.

167. **SPARTIUM.** Cal. of 1 L., open at the side, membranaceous at the top. Keel bent down. *A Shrub, with long, unarmed, rod-like branches. L. small, simple. Fl. large, yellow, in terminal racemes. Seeds about* 15. p. 78.

168. **CYTISUS.** Upper Lip of Cal. nearly entire; lower somewhat tridentate. Organs included. *Handsome Shrubs, mostly with ternate L. Keel obtuse.* p. 78.

169. **ADENOCARPUS.** Upper Lip of Cal. biparted; lower longer, trifid. Organs

included. Keel obtuse. Leg. covered with glands. *Shrubs, with divaricate branches, ternate L., Stip. on the L.-stalks, and racemes of yellow Fl.* p. 80.

202. **LUPINUS.** Cal. with 2 lips. Keel of 2 petals, beaked. Five of the Anthers oblong, and five subrotund. Pod coriaceous. Seeds separated by a cellular mass. *L. digitate.* p. 110.

iii. *Calyx of* 5, *nearly equal teeth.*

170. **ONONIS.** Cal. not inflated, open in the fruit (lower tooth longest, Sm.). Standard large, striate. Keel beaked. *Herbs, or Shrubs. L. simple or ternate* (*in* O. pinnata, *pinnate*). Fl. axillary. Stalks generally with a little soft awn. Seeds 1–3? p. 80.

171. **ANTHYLLIS.** Cal. inflated, persistent, covering the fruit. Seeds 1 or 2. *Shrubs, or Herbs, of very various habit. The Pod of* A. tetraphylla *is transversely* 2-*celled.* p. 82.

B. *One Stamen separate. Pod continuous,* 1-*celled.*

i. *L. ternate. Stip. not leaf-like.*

179. **PSORALEA.** Seed one. Leg. not opening. Primordial L. opposite! *European perennial plants, with purplish Fl. Cal. with glandular tubercles. Tenth Stamen sometimes united to the others at the base.* p. 96.

172. **MEDICAGO.** Leg. falcate or spiral! Seeds many. Organs springing elastically from the keel. Cal. with 5 nearly equal teeth. M. arborea *is a shrub, and some others are woody at the base*; M. circinata *has some pinnate L.*; M. sativa *has bluish Fl.; the others are mostly low, prostrate, perennial plants, with yellow Fl., ternate L., and Stip. not like the Lts.* p. 83.

173. **TRIGONELLA.** Leg. linear, compressed, acuminate, slightly curved. Seeds many. Fil. not attached to petals. *Low plants, mostly annual. Smell agreeable.* p. 86.

174. **MELILOTUS.** Leg. short, but exceeding calyx, elliptical or obovate. Seeds 1–3. Fil. not attached to petals. *Fl. in racemes, numerous, yellow or white. Erect or diffuse Herbs.* p. 87.

175. **TRIFOLIUM.** Leg. not exceeding calyx. Seeds 1–3. Fil. more or less attached to petals. Fl. in dense spikes, heads, or compact umbels. T. Lupinaster *has quinate L. Herbs, with purple, yellow, or white Fl.* p. 88.

ii. *L. ternate, but with Stip. like two additional Lts.*

176. **DORYCNIUM.** Pod short. Seeds about 2. Cal. 2-lipped, gibbous. Wings somewhat exceeding beakless keel, shorter than standard. Stigma evidently capitate. *Somewhat shrubby. Fl. numerous, small, whitish, in heads.* D. rectum *has a linear pod and many seeds.* p. 94.

177. **LOTUS.** Leg. linear or cylindrical, not winged. Seeds many, imbedded. Cal. somewhat 2-lipped: segments acuminate. Wings connivent. Keel beaked. Stigma to the naked eye subulate. Fl. 1–6, with a floral L., *generally yellow.* p. 95.

178. **TETRAGONOLOBUS.** Leg. with 4 wings, many-seeded. Keel beaked. *Fl. yellow or purple.* p. 96.

iii. *L. pinnate, with an odd Lt.*

180. **GLYCYRRHIZA.** The single Sta. quite free. Keel acute. Standard lanceolate, straight. Leg. oblong. Seeds 1–4. Cal. 2-lipped; upper least divided. *Perennial. Rac. axillary. Fl. purplish or white.* p. 96.

181. **GALEGA.** The single Sta. united to the others at the base. Keel obtuse. Leg. torulose, obliquely striate, not inflated. Cal. of 5, nearly equal, subulate teeth. *Smooth, erect Perennials. Fl. white or purplish.* p. 96.

182. **ROBINIA.** Keel obtuse. Seeds many. Style bearded. Cal. 2-lipped; upper least divided. *An American Tree, sometimes naturalized, with racemes of pink or white Fl. L. with stipulary spines.* p. 96.

183. **COLUTEA.** Standard with 2 calli at base. Keel with a short truncate beak. Cal. of 5 teeth: the upper shorter. Style ciliate on its whole length. Stigma lateral, hooked. Leg. inflated. Seeds many. *Unarmed Shrubs. Stip. small.* p. 96.

184. **PHACA.** Style subulate, hairless. Leg. somewhat inflated, attenuate at each end. Upper Suture tumid and seminiferous. Ovules more than 2. Keel obtuse. *Herbaceous. Fl. in axillary racemes. In some species the Leg. is imperfectly 2-celled.* p. 97.

196. **CICER.** Style hairless. Leg. inflated. Ovules 2. Cal. 5-cleft; the 2 or 4 upper divisions incumbent on the standard. *An annual plant, with large, wrinkled, acuminate seeds.* p. 102.

iv. *L. pinnate, without an odd Lt.*

197. **VICIA.** Style terete, at right angles with germen. Stigma transversely bearded below the tip. Two upper Teeth of Cal. shorter. *Lts. numerous, with a tendril, except in* V. lathyroides. p. 102.

198. **ERVUM.** Style terete, at right angles with germen. Stigma equally hairy all over. Cal. with 5, nearly equal, acute segments, nearly as long as corolla. Seeds 2–6. *Annual slender Herbs. Lts. numerous, small. L. ending in a tendril.* p. 106.

199. **PISUM.** Style ascending, 3-edged. Stigma longitudinal, downy. Upper Div. of Cal. shorter. *Smooth Herbs, with large, leaf-like stipules. L. tendrilled. Lts. few.* p. 107.

200. **LATHYRUS.** Style ascending, flattened vertically. Stigma downy, on dilated upper half of style. Upper Div. of Cal. shorter. *Herbaceous, climbing plants. L. tendrilled. Lts. few* (1–3 *pair*). L. Nissolia *and* L. Aphaca *have no Lts.* p. 107.

201. **OROBUS.** Style ascending, straight, terete, channeled above. Stigma downy, longitudinal. Upper Teeth of Cal. shorter and deeper. *Erect Herbs. L. without tendrils.* p. 109.

C. *Legume, more or less perfectly, longitudinally 2-celled. One Sta. separate. L. pinnate, with an odd Lt.*

185. **OXYTROPIS.** Leg. with valves turned in on the upper suture, or on both. Keel with a protruding cusp. *Herbaceous. Fl. in spikes. Leg. sometimes inflated.* p. 97.

186. **ASTRAGALUS.** Leg. with valves turned in on the lower suture. Keel obtuse, without a cusp. *Perennials, very various in appearance; a few of them woody and spinous.* p. 97.

187. **BISERRULA.** Leg. flat: the sides united by a narrow sept. Margins dentato-sinuate. *Fl. small, purplish, in ovate spikes. Spike-stalks shorter than L.* p. 100.

D. *Legume transversely divided* (*except in* Onobrychis, *which has only one division, and* Securigera, *where there is a continued, connected margin*). *L. simple in* Scorpiurus; *in the other genera pinnate, with an odd Lt.*

188. **SCORPIURUS.** Leg. revolute, longitudinally furrowed. Cal. in 5 equal segments. Keel divided at base, acuminate. *Annual Herbs. L. quite entire, attenuate. Stip. membranous.* p. 100.

189. **CORONILLA.** Leg. round, nearly straight. Upper Teeth of Cal. nearly united. Pet. with long claws. Keel acuminate. *Fl. in umbels.* p. 100.

193. **SECURIGERA.** Leg. flat: joints connected by a continuous margin. Cal. 2-lipped. Pet. with long claws. Keel acuminate. *Herbaceous; with the habit of* Coronilla. p. 101.

190. **ARTHROLOBIUM.** Leg. nearly round: joints truncate at each end. Keel small, obtuse. Cal. with 5, nearly equal teeth, without leafy bracts. *Smooth Herbs. Stip., if any, opposite to L.* p. 101.

191. **ORNITHOPUS.** Leg. compressed: joints truncate at each end. Keel very small. Cal. with 5, nearly equal teeth. Bracts leafy. *Hairy Herbs. Fl. in umbels, small, but elegant. Stip. small, attached to L.-stalk.* p. 101.

192. **HIPPOCREPIS.** Leg. compressed: joints deeply curved on one side. Keel divided at base, acuminate. Cal. with 5, equal, acute segments. Fl. in umbels. *Herbaceous* (*in my limits*). *Fl. yellow. Stip. membranous, oblique, undivided.* p. 101.

194. **HEDYSARUM.** Leg. compressed: joints several, lenticular, one-seeded. Keel oblong, truncate, exceeding wings. *Fl. in racemes, pink or whitish.* p. 101.

195. **ONOBRYCHIS.** Leg. of one joint and one seed, not opening, crested or winged. Keel obliquely truncate. Wings short. Cal. with 5, nearly equal, subulate segments. *Spike-stalks long.* p. 102.

XVIII. POLYADELPHIA. Hypericineæ.

138. **HYPERICUM.** Caps. of 3 or 5 cells, more or less complete. Cal. 5-parted, persistent. Groups of Fil. without basal glands. *Herbs, or Shrubs, with smooth, opposite L.* p. 65.

XIX. COMPOSITÆ. Syngenesia of Linnæus.

In this class, I have adopted the following Orders, instead of exactly following Linnæus:—

I. Florets all ligulate. Branches of the style convex, everywhere pubescent. Ligulatæ, or *Cichoraceæ. This, and most of the* Cynareæ, *form the* Syngenesia æqualis *of Linn.*

II. Central Florets tubular; outer ligulate. Radiatæ, or *Corymbiferæ, forming, with the* Discoideæ, Syngenesia superflua *of Linn.*

III. Florets all tubular; but the outer without stamens. Style without a joining. Discoideæ.

IV. Florets all tubular. Stigma with a marked joining on to the style. *Cynarocephalæ*, or Cynareæ. *Of these, the Tribe* Centaurieæ *belongs to the* Syngenesia frustranea *of Linn. The* Xeranthemeæ *are included in his* Syngenesia superflua; *the* Echinopsideæ *in* Syngenesia segregata.

V. Central Florets tubular; outer ligulate. Stigma with a marked joining on to style. Calendulaceæ. *Included by Linnæus in* Syngenesia necessaria.

VI. Antheriferous and style-bearing Fl. distinct. Anthers free. *This division will be found in* Monœcia Pentandria. Ambrosieæ.

Order I. LIGULATÆ.

The Tribes are—

1. Catanancheæ. Stigmas ovoid. Receptacle fibrillose. Gen. 381.

In all the other tribes the Stigmas are cylindrical or semicylindrical.

2. Scolymeæ. Seeds invested with the chaff of the receptacle. Gen. 382.

In the other tribes the Seeds are free.

3. Lapsaneæ. Crest of the Seeds 0, or a mere margin. Receptacle naked. Gen. 383–386.
4. Hyoserideæ. Crest chaffy. Receptacle naked. Gen. 387–390.
5. Hypochœrideæ. Crest, of the inner Seeds at least, feathery. Receptacle chaffy. Gen. 391–395.

In the four following Tribes the Crest is feathery, and the Receptacle naked:—

6. Tragopogoneæ. Cal. simple, without accessory Scales. Gen. 396–398.
7. Leontodonteæ. Cal. simple, but with accessory Scales. Gen. 399–402.
8. Picrideæ. Cal. double. Gen. 403, 404.

9. Scorzonereæ. Cal. tiled. Gen. 405–407.

In the remaining Tribes the Shafts of the Crest are hair-like:—

10. Hieracieæ. Crest of rough, brittle, brownish hairs. Gen. 408–410.

11. Soncheæ. Crest of soft hairs. Seed ending abruptly. Gen. 411–414.

12. Crepideæ. Crest of soft hairs. Seed taper, and often beaked; the Beak being an evident prolongation of the seed. Gen. 415–420.

13. Chondrilleæ. Crest on a filiform stalk, having a marked separation from the seed. Gen. 421–425.

Tribe I. *CATANANCHEÆ.*

381. **CATANANCHE.** Cal. tiled. Phyll. pellucid, extending down the stalk. Seeds top-shaped. Crest of 5 awned scales. p. 173.

Tribe II. *SCOLYMEÆ.*

382. **SCOLYMUS.** Cal. ovate, tiled, surrounded by somewhat thorny bracts. *Thistle-like plant, with yellow Fl.* p. 173.

Tribe III. *LAPSANEÆ.*

383. **LAPSANA.** Cal. of 8, equal, channeled phyllaries, and two or three minute outer scales at the base. Fil. 8–12. Crest 0. p. 173.

384. **RHAGADIOLUS.** Cal. of about 8, equal, convolute phyllaries, involving the terete, taper seeds; *sometimes with smaller ones at the base.* Flts. 8–12. p. 174.

385. **ARNOSERIS.** Cal. of about 12, equal, connivent phyllaries, with small ones at the base. Recept. deeply honeycombed at the margin. Seeds abrupt, 5-cornered, attenuate, crowned with an undivided margin. p. 174.

386. **APOSERIS.** Cal. double; outer of 8, shorter phyllaries. Seeds somewhat attenuate upwards, ending in a minute cup. *Scape naked, 1-flowered.* p. 174.

Tribe IV. *HYOSERIDEÆ.*

387. **HEDYPNOIS.** Phyll. linear, in one row, with accessory scales; inner involving the outer seeds. Seeds cylindrical, somewhat attenuate, incurved. Crest double; outer of a few hair-like scales; inner of from 5 to 7 long pales. p. 174.

388. **HYOSERIS.** Phyll. in one row, with a short calycle; inner Scales concave. Seeds attenuate, striate, or finely granular. Crest of outer Seeds very short, with one or two longer pales; of inner Seeds in two rows. Pales acuminate, with intermediate hairs. *Scapes 1-flowered.* p. 174.

389. **CICHORIUM.** Outer Cal. of about 5 phyllaries; inner long, of 8–10. Recept. sometimes with a few fimbrils. Seeds obovate, striate, hairless. Pales of Crest short and numerous. *Coarse, bitter, milky plants, with beautiful blue Fl.* p. 174.

390. **TOLPIS.** Cal. calycled. Outer Phyll. very lax, persistent. Recept. honeycombed. Seeds top-shaped, striate. Crest of outer Seeds scale-like; of inner of rough, bristle-like chaff, and short, intermediate bristles. p. 174.

Tribe V. *HYPOCHŒRIDEÆ.*

391. **HYPOCHŒRIS.** Cal. somewhat tiled. Seeds hairy, muriculate. Crest double; outer of filiform hairs. *L. undivided. Fl. yellow.* p. 175.

392. **ACHYROPHORUS.** Like *Hypochœris*, except in the Crest, which is simple and feathery. *In the European species all the seeds are beaked, the inner ones most so, and the Cal. is campanulate.* p. 175.

393. **METABASIS.** Phyll. acuminate, prickly on the back, in 2 series, and with accessory scales. Seeds nearly cylindrical; outer with a short, inner with a long beak. Crest in two rows: that of the outer Seeds of very short scales. p. 175.

394. **SERIOLA.** Cal. somewhat calycled. Seeds alike, muriculate, with a long beak. Crest simple; shafts feathery at the tip. p. 175.

395. **ROBERTIA.** Cal. simple. Seeds furrowed, smooth, with a short beak. *Shafts of Crest semilanceolate.* p. 175.

Tribe VI. *TRAGOPOGONEÆ.*

396. **UROSPERMUM.** Cal. campanulate, simple, in about 8 divisions. Recept. fimbrilliferous. Seeds muricate, with a long beak inflated at the base. p. 175.

397. **GEROPOGON.** Recept. covered with hair-like scales on the outer sides of the Flts. Seeds striate, cylindrical, with a long beak. Crest of outer Seeds of about 5, serrulate, acuminate pales. p. 175.

398. **TRAGOPOGON.** Phyll. united at the base, without accessory scales, at last reflexed. Seeds longitudinally muriculate, with a lateral scar and a long beak. All the Crests feathery. The 5 longer Shafts naked at the end. *L. quite entire, smooth, sheathing at the base. Fl. solitary.* p. 175.

Tribe VII. *LEONTODONTEÆ.*

399. **LEONTODON.** Seeds terete, striate, tapering at top. Crest in two rows, similar in all. Apargia *of Smith.* p. 176.

400. **MILLINA.** Cal. with numerous accessory scales. Seeds transversely striate, with a long beak. Crest single; shafts not dilated at the base, similar in all. p. 177.

401. **THRINCIA.** Cal. simple, with accessory scales. Seeds of the centre beaked. Crest of the outer Seeds scaly. *Scape simple.* p. 177.

402. **KALBFUSSIA.** Cal. simple, with accessory scales. Seeds terete, tubercled; inner with a short beak and a crest of 10 feathers. No Crest to the outer seeds. *Scape branched.* p. 177.

Tribe VIII. *PICRIDEÆ.*

403. **PICRIS.** Outer Cal. of numerous short scales. Seed roundish, somewhat attenuate at each end, transversely rugulose. Scar terminal. Beak short. *Crest (in the European species) alike to all the seeds. All the species are rough, chiefly with glochidiate hairs.* p. 178.

404. **HELMINTHIA.** Outer Phyll. few (3–5), large, ovate; inner about 8, narrower, equal. Seeds oval, transversely rugulose. Crest on a long filiform stalk. *L. semiamplexicaul, wavy, prickly.* p. 178.

Tribe IX. *SCORZONEREÆ.*

405. **PODOSPERMUM.** Cal. cylindrical, tiled. Seeds beaked, seated on a hollow stalk. p. 178.

406. **SCORZONERA.** Cal. tiled. Phyll. scariose on the margin. Recept. naked. Seed with a lateral scar, without stalk or beak (beaked, according to Koch). Shafts all feathery. *L. entire in the European species.* p. 179.

407. **GALASIA.** Cal. tiled. Seed without stalk or beak. Shafts of Crest rough: outer hair-like; inner on a lanceolate base, villous on the inner edge. p. 180.

Tribe X. *HIERACIEÆ.*

408. **ANDRYALA.** Cal. in a single series, with a few accessory scales. Recept. alveolate; the edges finely laciniate, exceeding the seeds. Seeds 10, striate. *In Species* 5 *and* 6 *there is some chaff on the margin of the receptacle.* p. 180.

409. **HIERACIUM.** Cal. tiled. Recept. alveolate; the edges of the pits divided, but shorter than the pentagonal seeds, which are not contracted at the top. p. 180.

410. **MULGEDIUM.** Cal. double; the outer somewhat tiled. Seeds compressed. Beak short, expanding at the top. Recept. slightly pitted. p. 188.

Tribe XI. *SONCHEÆ.*

411. **ZOLLIKOFERIA.** Cal. tiled. Margin of Phyll. skinny. Seeds 4-edged, finely striate, with 4 descending horns! p. 188.

412. **SONCHUS.** Cal. tiled, compressed. Seeds prismatic, abrupt, with 4 or 5 rounded ribs, without tubercles. *Bitter, milky plants, with hollow stems.* p. 188.

413. **PICRIDIUM.** Cal. tiled. Margin of Phyll. whitish. Seeds prismatic, abrupt, tubercled. p. 189.

414. **PRENANTHES.** Cal. cylindrical, of 4–6 phyllaries, calycled. Flts. 3–5. Seeds truncate, attenuate at base. Crest rigid, nearly sessile. *Smooth, milky plants. Fl. in panicles.* p. 189.

Tribe XII. *CREPIDEÆ.*

415. **PTEROTHECA.** Cal. of 2 pretty regular series of phyllaries, and a few small scales at the base. Recept. furnished with long hairs! Outer Seeds oblong, corky, wrapped in the phyllaries, convex externally, marked internally with 3–5 wing-like ribs; inner cylindrical, beaked. p. 189.

416. **ZACYNTHA.** Cal. of 8 phyllaries, with accessory scales. Phyll. thickened and concave after flowering, enclosing the outer seeds. Seeds compressed, nearly wedge-shaped, with a very short beak. Crest caducous. p. 189.

417. **ENDOPTERA.** Cal. double. Outer Phyll. very short; inner convolute, involving the outer. Seeds torulose, connivent after flowering. Recept. somewhat fimbrillose. Outer Seeds with an internal wing! inner with a long beak and no wing. p. 189.

418. **ÆTHEORHIZA.** Cal. calycled. Outer Phyll. small, adpressed. Recept. without long hairs. Seeds obtusely 4-edged, with a short beak. p. 189.

419. **CREPIS.** Cal. calycled. Outer Phyll. lax. Recept. somewhat hispid. Seed attenuate at top. Crest compound. *Branched plants. L. pinnatifid, sinuate, or toothed. Fl. yellow* (*except in* C. incarnata). p. 189.

420. **BARKHAUSIA.** Cal. calycled or somewhat tiled. Recept. alveolate. Margins of Pits laciniate. Seeds terete; those of the centre at least produced into a beak as long as the seed. *Habit of* Crepis. *Fl. yellow, except in* B. purpurea *and* B. rubra. p. 191.

Tribe XIII. *CHONDRILLEÆ.*

421. **PHÆNOPUS.** Cal. cylindrical, somewhat tiled. Flts. about 5. Seed terete, beaked. p. 192.

422. **LACTUCA.** Cal. cylindrical, calycled in 2–4 series. Flts. numerous. Seeds compressed, smooth, ending abruptly in a filiform stalk to the crest. *Plant rather bitter. Stem nearly solid. Fl. numerous.* p. 192.

423. **TARAXACUM.** Cal. double. Phyll. callous at the tip. Seeds oblong, striate, spinulose at the top. Crest on a filiform stalk. *Stemless, milky plants. Fl. large.* p. 193.

424. **WILLEMETIA.** Cal. simple, with accessory scales. Seeds 5-edged; the ribs produced at top into tooth-like tubercles. Beak longer than the seed. p. 194.

425. **CHONDRILLA.** Cal. cylindrical, in 2 rows, and calycled with short, adpressed scales. Seed squamuloso-muricate; the upper squamule having the appearance of a calyx. p. 194.

Order II. RADIATÆ.

The Tribes are:—

1. Inuleæ. Branches of Style of tubular Florets convex, obtuse; upper part externally pubescent. Gen. 426–429.
2. Asterineæ. Branches of Style of tubular Florets flattened, somewhat acute, pubescent externally. Crest hair-like. Recept. naked. Gen. 430–438.
3. Gallinsogeæ. Branches of Style of Tubular Florets with a tuft of glands in the upper part, but with a conical or filiform appendage beyond the tuft. Recept. chaffy. *L. opposite.* Gen. 439, 440.

In the two following tribes the branches of the style are truncate, with a terminal tuft of glands:—

4. Anthemideæ. Crest 0, or only a short crown. Gen. 441–449, 451–453.
5. Senecionideæ. Crest hair-like. Gen. 454–459.
6. Eupatoriaceæ. "Style of the complete Fl. cylindrical. Branches long, somewhat club-shaped; upper part externally puberulo-papillose. Rows of Stigmas hardly prominent, often ceasing before the middle of the branches of the style."—DC. "Style of complete Flt. cylindrical, cloven. Branches long, nearly terete or club-shaped; upper part puberulo-papillose."—Koch. *Recept. naked. Crest composed of hairs or bristles.* Gen. 460–465.

I adopt this tribe in compliance with two such distinguished botanists as De Candolle and Koch, and for the sake of convenience, without understanding, exactly, in what its essential character consists. It includes two groups, differing in habit from each other, and from all the other tribes. There are no radiate Flts., except in *Tussilago*; and the separation into those which have, and those which have not, one or more series of fertile florets, is not a natural one.

Tribe I. *INULEÆ.*

426. **BUPHTHALMUM.** Crest short, paleaceous. Recept. chaffy. *L. alternate, undivided.* p. 194.

427. **PULICARIA.** Outer Crest united into a short crown; inner of rough bristles. Recept. naked. Anthers tailed. *L. undivided. Stem-L. cordato-sagittate.* p. 194.

428. **JASONIA.** Crest entirely of rough bristles; the outer very short. Recept. naked. Anthers tailed. *L. sessile, undivided.* p. 195.

429. **INULA.** Crest simple, of roughish hairs. Anthers tailed. Recept. naked. Cal. tiled. *L. sessile, often amplexicaul, undivided. Fl. large, yellow.* p. 195.

Tribe II. *ASTERINEÆ.*

A. *All the Florets of one colour.*

430. **SOLIDAGO.** Crest of one row of rough hairs. Rays 5–15, in one series. Recept. without chaff or fimbrils. Cal. of many closely tiled phyllaries. p. 196.

431. **LINOSYRIS.** Seeds compressed laterally. Crest of 2 rows of bristles. Stigmas somewhat exsert. Recept. naked, slightly pitted. Cal. campanulate, shorter than the Flts. *Erect. L. simple, narrow. Fl. terminal, yellow.* p. 197.

B. *Rays and Disc of different colours.*

432. **ASTER.** Cal. tiled in many rows. Rays in one series, productive. Recept. flat, pitted. Margin of Pits toothed. Seeds compressed. Crest of many rows. p. 197.

433. **GALATELLA.** Phyll. tiled. Rays in one series, seedless. Recept. pitted. Margins toothed. Seed hirsute. Crest of many rows. p. 197.

434. **STENACTIS.** Phyll. in 2 or 3 rows. Rays in one row. Recept. naked, dotted. Seeds compressed. Crest of tubular Flts. double, the outer short. p. 198.

435. **BELLIDIASTRUM.** Phyll. in 2 rows, linear, acute, somewhat leafy. Recept. conical, naked, dotted. Seeds oblong, slightly compressed, somewhat striato-spinulose. Crest of numerous, flexuose hairs. p. 198.

436. **BELLIUM.** Phyll. oblong, in 2 rows. Recept. ovoideo-conical, naked. Flts. of Disc usually 4-toothed. Seeds compressed, rather downy. Crest of 4 or 5, membranous, truncate scales, and as many setæ. *Both these genera resemble the Daisy.* p. 198.

437. **BELLIS.** Cal. campanulate or hemispherical. Phyll. subacute, equal. Recept. conical, naked. Seeds compressed, obovate. Crest 0. *L. obovate, undivided. Fl.-stalks simple.* p. 198.

438. **ERIGERON.** Rays numerous, in many series, very narrow. Recept. naked, dotted. Seeds compressed. Crest of rough hairs. *Stem erect. L. simple, undivided.* p. 198.

Tribe III. *GALLINSOGEÆ.*

439. **BIDENS.** Phyll. in 2 rows. Rays usually wanting. Recept. nearly flat, chaffy. Tuft of Glands of Stigma conical. Seeds crowned with about 3 spines armed with backward prickles. *Seeds nearly oval, obcompressed.* p. 199.

440. **GALLINSOGA.** Cal. hemispherical, of 5 or 6 phyllaries. Rays about 5. Recept. chaffy. Seed angular. Crest of acuminate, feathered scales. p. 199.

Tribe IV. *ANTHEMIDEÆ.*

A. *Receptacle chaffy.*

449. **LONAS.** Cal. tiled, campanulate. Recept. conical. Rays wanting. Seed cylindrical, furrowed, wingless. Crest a small, oblique, entire, membranous crown. p. 206.

451. **PLAGIUS.** Cal. tiled, campanulate. Recept. flat. Rays 0. Seeds angular, on a lengthened callus. Crown scariose, one-sided. p. 206.

452. **SANTOLINA.** Cal. closely tiled. Rays usually wanting. Tube of Flts. of Disc prolonged at base into a ring or hood. Seed without crest or crown. *Shrubby aromatic plants. L. with short pinnæ or teeth.* p. 206.

453. **DIOTIS.** Cal. closely tiled. Rays 0. Tube of Flts. with 2 wings and 2 obtuse spurs. Seed without crest or crown. *A shrubby plant, thickly covered with white wool.* p. 207.

These four genera, by an error which I did not discover till too late, have been placed and numbered in the description of the species, among those with a naked receptacle.

441. **ANTHEMIS.** Cal. hemispherical, tiled. Phyll. nearly equal, scariose on margin. Recept. convex. Rays oblong. Flts. of Disc regular. Seed not winged, or with a very narrow wing. *Bitter, aromatic plants, with finely divided L. Rays white (yellow in* A. tinctoria). *Disc yellow.* p. 199.

442. **ANACYCLUS.** Cal. somewhat campanulate, tiled. Recept. convex. Tube of Florets of Disc with 2 wings. Rays oblong. Seeds obcompressed, bordered with an entire wing, which is connected with the crown. *Rays sometimes wanting. Hardly distinguished in habit from* Anthemis. p. 201.

443. **ACHILLEA.** Cal. ovoid, campanulate or oblong, tiled. Recept. narrow. Rays nearly circular. Flts. of Disc with a winged tube and 5 equal teeth. Seeds often bordered. *Bitter, and often aromatic plants, with numerous corymbose Fl.* p. 202.

B. *Receptacle naked.*

444. **PYRETHRUM.** Cal. tiled, campanulate. Recept. convex or hemispherical. Rays in a single row. Seeds not winged; those of Disc with a toothed crown. *Rays white. Disc yellow. L. divided.* p. 204.

445. **LEUCANTHEMUM.** Cal. broadly campanulate, tiled. Margin of Phyll. mem-

branous. Rays in a single row. Seeds not winged, striate; those of Disc quite bald, striate. p. 205.

446. **NANANTHEA.** Phyll. 8 or 9, membranous on margin. Recept. small. Rays in one row. Flts. of Disc 4-cleft. Seeds all alike, without crest, hair, or wing. p. 205.

447. **CHRYSANTHEMUM.** Cal. tiled. Margin of Phyll. membranous. Rays in a single row. Seeds of Rays with 3 wings; of Disc with one short one. p. 206.

448. **MATRICARIA.** Cal. tiled. Phyll. nearly equal. Recept. conico-cylindrical. Rays in one row. Seeds angular, wingless, *crowned. L. finely divided. Rays white. Disc yellow. Bitter, aromatic Herbs.* p. 206.

Tribe V. *SENECIONIDEÆ.*

454. **DORONICUM.** Cal. hemispherical, of linear, acuminate, nearly equal phyllaries. Recept. convex. Rays in 1 row. Seed furrowed, without beak or wing: those of the Ray without a crest. *Crest of those of Disc whitish. L., or their ultimate divisions, heart-shaped. Fl. large, yellow.* p. 207.

455. **ARONICUM.** Cal. hemispherical, of linear, acuminate, nearly equal phyllaries. Rays in one row. Seed oblongo-turbinate, furrowed, without beak or wing; all crested. p. 207.

456. **ARNICA.** Cal. hemispherical, of equal, lineari-lanceolate phyllaries. Rays in one row. Seed barrelled, somewhat ribbed, slightly hairy; all crested. *Fl. large, yellow.* p. 207.

457. **SENECIO.** Cal. of 1 row of phyllaries, with accessory scales; tips withered. Crest of Seeds caducous. *This genus is very much determined by habit, as the characters drawn from the accessory scales sometimes fails.* p. 207.

458. **CINERARIA.** Cal. somewhat calycled. Phyll. in one row, scariose on the margin. Recept. flat. Seeds obcompressed. Outer Seeds winged on the margin. p. 211.

459. **LIGULARIA.** Cal. campanulate. Phyll. in one row. Recept. flat. Branches of Style in Disc obtuse, pubescent on both sides, terminating in a short cone. Seeds furrowed, without wing, beak, or fringe. p. 212.

Tribe VI. *EUPATORIACEÆ.*

460. **HOMOGYNE.** Cal. cylindrical. Female Flts. few, filiform. Styles of all the Flts. alike. Seed subcylindrical, sulcate. *Mountain Perennials. L. stalked, nearly round, mostly radical.* p. 212.

461. **PETASITES.** Subdiœcious. The Male Heads have 3–5 female, filiform Flts., and the Fl. of the Disc produce no seeds. The Female Heads have several rows of filiform female Flts., and only 4 or 5 male in the disc. Seed cylindrical. *L. after the Fl., radical, stalked, broad. Scape scaly, supporting a Thyrsus.* p. 212.

462. **NARDOSMIA.** Subdiœcious. Male Heads with one row of ligulate Flts., not exceeding calyx, and many barren ones in the disc. Female Heads with several rows of minute ligulate female Flts., and 1 to 5 male in the disc. Seeds nearly terete, hairless. *L. stalked, cordate. Scape scaly, supporting a fastigiate Thyrsus.* p. 212.

463. **TUSSILAGO.** Rays in several rows, ligulate, female, far exceeding calyx. Flts. of the Disc few, male. Bristles of the Crest very slender. *L. broad cordate, coming after the solitary Fl. Root creeping.* p. 212.

464. **ADENOSTYLIS.** Flts. all alike, tubuloso-campanulate. Branches of Style papillose. Seed nearly terete, striate. *Mountain Perennials. L. alternate, stalked, reniform. Fl. in a leafless corymb.* p. 212.

465. **EUPATORIUM.** Flts. funnel-shaped, all alike. Anthers included. Branches of the Style exsert, cylindrical, obtuse. Seed striate or angular. Hairs of Crest rough, in one row. *L. opposite. Fl. many, small, in a terminal corymb.* p. 212.

Order III. DISCOIDEÆ.

The Tribes are:—

1. Artemisieæ. Crest 0 or a short crown. Gen. 450, 466–470.
2. Gnaphalieæ. Crest of hairs or bristles. Gen. 471–447.

Tribe I. *ARTEMISIEÆ.*

466. **COTULA.** Recept. papillose, not chaffy. Female Flts. without petals. Flts. of Disc 4-cleft. Seeds obcompressed, bordered; those of the Rays stalked. p. 213.

467. **ARTEMISIA.** Cal. ovoid or nearly globose. Phyll. tiled, skinny, converging. Recept. not chaffy. One row of tridentate external Flts. Anthers not tailed. Seeds with a minute disc, without a beak. *Aromatic and very bitter plants. L. divided, except in* A. cærulescens. p. 213.

450. **TANACETUM.** Cal. tiled, campanulate. Recept. convex. Rays 0; but there is a single row of tridentate, tubular fertile Flts. Seed angular, terminating in a large disc. Crest a small 5-lobed crown. *Bitter, aromatic Herbs, with pinnate L.* p. 206.
This Genus has been erroneously placed, and numbered, in the description of the species, among the *Anthemideæ.*

468. **CARPESIUM.** Cal. tiled, hemispherical. Outer Phyll. spreading. Several outer rows of fertile Flts. Recept. not chaffy. Anthers tailed. Seed not beaked. *Habit of* Bidens. p. 215.

469. **MICROPUS.** Phyll. as many as there are fertile Flts., enveloping the Fr. Flts. of Disc barren. Anthers tailed. *Habit of* Filago. p. 215.

470. **EVAX.** Phyll. scariose, oval, close. Flts. of Disc barren. Fertile Flts. slender, in many series, with intermediate chaff, which does not extend to the disc. Seeds without beak or crest. *Fl. among rosettes of L.* p. 215.

Tribe II. *GNAPHALIEÆ.*

471. **FILAGO.** Phyll. gradually passing into chaff of receptacle; outer woolly at back; inner scariose. Recept. filiform. Outer Flts. fertile, filiform; those of the Disc 4-cleft, complete. Anthers tailed. Seed terete. Crest in central Flts. of filiform setæ; of outer different or wanting. p. 216.

472. **GNAPHALIUM.** Cal. ovoid. Phyll. tiled, somewhat pellucid. Recept. flat, quite naked. Rays filiform. Anthers with 2 awns at base. Seeds nearly terete. Crest one row of filiform bristles. *Herbage cottony. Stem round. L. quite entire.* p. 217.

473. **HELICHRYSUM.** Phyll. tiled, skinny; the inner coloured, flower-like! Rays fertile, in one row. Recept. flat, not chaffy. Seed beakless with a terminal areole. Crest of rough bristles. p. 217.

474. **CONYZA.** Phyll. nearly in one row, linear, acuminate. Recept. flat. Outer Flts. numerous, filiform, in many rows; those of Disc few. Seed compressed, attenuate. Crest of 1 row, of nearly smooth bristles. p. 218.

Order IV. CYNAREÆ.

The Tribes are:—

1. Echinopsideæ. Fl. each with a separate tiled calyx! Gen. 475.
2. Carduineæ. Flts. all complete. Phyll. not expanded at the top. Recept. fimbrillose (except sometimes in *Onopordon.*) Gen. 476–488.
3. Carlineæ. Flts. all complete. Phyll. expanded at the top. Recept. fimbrillose. Gen. 489–496.

4. CENTAUREÆ. Outer Flts. neuter. Gen. 497–501.
5. XERANTHEMEÆ. Outer Flts. with Styles only. Gen. 502.

Tribe I. *ECHINOPSIDEÆ.*

475. **ECHINOPS.** Flts., each with a tiled calyx, united into a globular head; the upper earliest. *Phyll. few, reflexed. Outer Scales of partial calyx filiform; middle somewhat spatulate; inner linear, acuminate, keeled.* Crest very short, of numerous rough scales united at base into a cup. p. 218.

Tribe II. *CARDUINEÆ.*

476. **BERARDIA.** Phyll. in many rows, linear, subulate at top, unarmed. Recept. honeycombed; edges somewhat fringed. Stigmas short, diverging, obtuse. Shafts of Crest undivided, strong, numerous, hairy, persistent. p. 219.

477. **SERRATULA.** Phyll. tiled: outer somewhat mucronate; inner longer, skinny on margin. Recept. fimbrilled. Anthers with an obtuse appendage. Stigmas diverging. Seed smooth, with an oblique scar. Crest of numerous, simple, rough, unequal hairs. *Perennial, upright plants. Fl. in a terminal panicle.* p. 219.

478. **SAUSSUREA.** Phyll. tiled, unarmed. Recept. fimbrilled. Anthers with a long appendage at top, and 2 bristles at base. Shafts of Crest undivided, feathery, of equal length. p. 219.

479. **STÆHELINA.** Phyll. tiled, closely adpressed, unarmed, coloured at top. Recept. flat, chaffy. Anthers with a long appendage at top and 2 bristles at the base. Stigmas united. Shafts of Crests branched, quite naked. p. 219.

480. **ARCTIUM.** Phyll. ending in a hooked awn. Recept. fimbrilled. Anthers with filiform tips and subulate tails. Stigmas free. Crest caducous, of many, unequal, rough hairs, not united into a ring. p. 219.

481. **CARDUUS.** Midrib of Phyll. prolonged into a simple awn. Recept. fimbrilled. Anthers without tails. Stigmas united. Crest of many rough hairs, united into a conspicuous, separable ring. Seed with a small basal, and large terminal scar. *In* C. leucographus *the shafts are very nearly smooth. Herbaceous, spinous plants.* p. 220.

482. **CIRSIUM.** Midrib of Phyll. prolonged into a simple awn. Recept. fimbrilled. Anthers without tails. Stigmas united. Crest feathery. Covering of Seed membranous, united in a ring. *Habit of* Carduus. p. 222.

483. **CHAMÆPEUCE.** Phyll. in many rows, ending in a simple spine. Tails of Anthers long and jagged! Stigmas nearly united. Seed with a hard bark, obovate, straight. Crest feathery. p. 227.

484. **NOTOBASIS.** Cal. surrounded with pinnatipartite bracts. Phyll. in many rows, ending in a 3-edged spine. Seeds of central Flts. compressed, almost horny; attachment oblique. Marginal Flts. abortive. Crest feathery. p. 227.

485. **PICNOMON.** Cal. surrounded with leafy bracts. Phyll. ending in a pinnato-spinulose appendage; innermost without an appendage. Stigmas free at top. Nect. with 5 rays. Crest feathery (on a 5-angled ring, DC.). p. 228.

486. **ONOPORDON.** Phyll. ending in a simple spine, not connected with a midrib. Recept. deeply pitted. Edges of the Pits sinuato-dentate. Anthers with a linear appendage and short tails. Stigmas nearly concrete. Scales of Crest almost feathery, ciliate, united into a horny ring. *Large, hard, spinous, hoary plants.* p. 228.

487. **CYNARA.** Phyll. ending in a simple spine not connected with a midrib. Recept. fimbrillose. Div. of Cor. very unequal. Appendage of Anthers very blunt. Tails short and bearded. Scar of Seed broad. Crest deciduous, adhering to a ring. Shafts simple. p. 228.

488. **ATRACTYLIS.** Outer Phyll. spinous on the edge; inner entire. Chaff of Recept.

multifid. Anthers with tips and bearded tails. Stigmas nearly concrete. Shafts of Crest branched, feathery. p. 228.

Tribe III. *CARLINEÆ.*

489. **KENTROPHYLLUM.** Outer Phyll. ribbed, spinous at the edge; inner with a broad, dentate appendage. Fil. with a tuft of hairs in the middle. Stigmas concrete. Crest of ciliate chaff, more or less deficient to outer Flts. Outer Shafts short and blunt; inner lanceolate, acute. p. 228.

490. **CARDOPATIUM.** Cal. cylindrical. Outer Phyll. with a spinous margin, produced at top into a subulate, somewhat recurved, spinous appendage; inner subscariose, spinescent and denticulate at top. Flts. about 8, palmato-quinquefid, gibbous at base. Fil. smooth. Tails of the Anthers with reversed hairs. Crest of 8–10 unequal pales. p. 228.

491. **CARDUNCELLUS.** Outer Phyll. ribbed, spinous at the edge; inner with a broad, dentate appendage; innermost nearly simple. Fil. with a ring of hairs in the middle. Stigmas almost concrete. Shafts of Crest all long and hair-like. *In* C. monspeliensium *the shafts are feathered.* p. 229.

492. **CARTHAMUS.** Outer Phyll. ribbed, spinous at the edge; inner with a broad, dentate appendage. Stigmas nearly concrete. Crest 0. p. 229.

493. **CARLINA.** Outer Phyll. ribbed, spinous at the edge; inner with a lanceolate, entire, petal-like appendage. Anthers with feathery tails. Shafts of Crest branched, feathery, deciduous. p. 229.

494. **SILYBUM.** Outer Phyll. with a palmato-spinous appendage, and ending in a long spine; inner simple, not expanded at the top. Cor. somewhat ringent. Upper Areole of Seed a horny ring, bearing a deciduous crest of ciliate shafts. p. 230.

495. **RHAPONTICUM.** All Phyll. expanded, unarmed. Shafts of Crest rough, *brown, rigid,* not feathered. p. 230.

496. **LEUZEA.** All Phyll. expanded, unarmed. Fimbrils of Recept. linear. Areole of Base of Seed somewhat oblique. Shafts *white, soft,* feathered. Seeds conical. p. 230.

Tribe IV. *CENTAURIEÆ.*

497. **CNICUS.** Phyll. close, ending in a long, pinnate spine. Barren rays about equal to Flts. of disc. Seed regularly striate, with a broad, lateral areole. Shafts of Crest quite smooth; inner short. p. 230.

498. **MICROLONCHUS.** Phyll. close, ending in a simple point or awn. Rays somewhat larger than Flts. of disc. Chaff capillary. Seed with a lateral, horny areole at base. Crest double; the inner combined into a broad unilateral pale. p. 230.

499. **CRUPINA.** Phyll. close, acute, quite entire, unarmed, not enlarged at top. Rays large. Seeds with an areole at base. Chaff narrow lanceolate, acuminate. Crest of the outer Seeds hardly any; of the inner of very short and very numerous outer shafts; inner much longer than seed; all very rough and sharp. p. 230.

500. **CENTAUREA.** Phyll. closely tiled, expanded at top. Rays large (wanting in *C. nigra*). Seeds compressed, with a lateral or oblique scar. Crest of numerous, rough, not feathery shafts, generally shorter than seed. p. 230.

501. **GALACTITES.** Phyll. numerous, spinose, closely tiled. Recept. with a few, fine, deciduous fimbrils. Rays large, somewhat ringent. Appendage of Anthers slightly hooked. Tails none. Stigmas concrete. Areole direct. Shafts of Crest feathery, united in a separable ring. p. 235.

Tribe V. *XERANTHEMEÆ.*

502. **XERANTHEMUM.** Discoid. Outer Row of 2–3-cleft styliferous but unproductive Flts. Phyll. free, tiled. Recept. chaffy. Seeds top-shaped. Crest of 5–7 awns to Flts. of disc. p. 235.

Order V. CALENDULACEÆ.

503. **CALENDULA.** Flts. of Ray ligulate, fertile; of Disc barren. Recept. naked. Stigma of radiant Flts. deeply divided; of Disc nearly entire. Seeds beaked. Crest none. p. 235.

XX. GYNANDRIA.

I. MONANDRIA. ORCHIDEÆ.

In this Order the Cells of the Anther are so detached as to give the appearance of two Anthers. Flowers ringent. Outer circle of 3 sepals; inner of 2 petals and a nectary, which, except in *Herminium* and *Malaxis*, differs materially in form from the petals.

A. *Masses of Pollen divided into grains connected by an elastic substance.*

i. *Nectary with a spur.*

758. **LIMODORUM.** Label of Nect. undivided. Anther terminal, free. *Plant purplish-brown, without L. Root a bundle of fleshy fibres.* p. 349.

759. **EPIPOGIUM.** Masses of Pollen ending in a solid, subulate point. Column hollowed in front, dilated upwards. Spur inflated. Germen not twisted. *Scales sheathing; no L. Root branched, fleshy.* p. 349.

760. **ORCHIS.** Masses of Pollen rounded at end, placed in two, distinct, vertical cells. Spur not inflated. Germen twisted. *Tubers 2, rounded or palmate.* p. 349.

ii. *No posterior Bag or Spur to the Nectary.*

761. **ACERAS.** Masses of Pollen connected under one hood. Label flat. Sep. converging. *Tubers of Root undivided.* p. 353.

762. **OPHRYS.** Label convex; of 2 or 4 lobes, often not very distinct, and a small central divison, sometimes wanting. Cal. spreading (except in *O. alpina*). *Tubers of Root rounded.* p. 353.

763. **SERAPIAS.** Label with a callus at base; middle Segm. largest, acute, flat; lateral erect. Sep. and Pet. erect, acuminate. *Tubers rounded.* p. 355.

767. **HERMINIUM.** Pet. 3-lobed, acute, nearly resembling the obtusely keeled nectary. *Second Tuber distant.* p. 355.

B. *Pollen powdery.*

i. *No Bag or Spur to the Nectary.*

764. **GOODYERA.** Nect. hollowed at the base. Sep. spreading. Pet. convergent. Column without wings. *Fl. spirally disposed. Root creeping.* p. 355.

765. **SPIRANTHES.** Label channeled. Base embraced by the converging calyx. Pet. porrect. Column without wings. *Tubers elongated, often more than two.* p. 355.

766. **NEOTTIA.** Nect. somewhat hollowed at base, 2-lobed. Beak of Stigma entire, without an appendage. Perianth forming a hood. *Plant brown, leafless. Root of numerous fleshy fibres or tubers.* p. 355.

768. **LISTERA.** Label flat. Cal. and Pet. hardly spreading, nearly similar. Anther sessile. Column without wings. *Root a bundle of somewhat fleshy fibres.* p. 355.

769. **EPIPACTIS.** Nect. deeply hollowed at base, contracted in the middle; the upper part undivided. Anther terminal. *Root somewhat creeping, with fleshy fibres.* p. 355.

C. *Pollen at last waxy; in four masses.*

770. **CORALLORHIZA.** Lower Sep. united at base with the nectary. Nect. 3-lobed; lateral Lobes small; middle with 2 prominent ridges at base. *Root much branched, fleshy.* p. 356.

771. **LIPARIS.** Sep. free. Nect. channeled, sessile at base of column, entire, much broader than the sepals. Anther a deciduous lid. *Base of Stem somewhat bulbous. Root fibrous.* p. 356.

772. **MALAXIS.** Sep. free. Nect. embracing base of column, entire, resembling the sepals. Anther sessile, terminal, persistent. Germen not twisted. *Base of Stem often somewhat bulbous.* p. 356.

II. DIANDRIA. Orchideæ.

773. **CYPRIPEDIUM.** Nect. inflated. Column with a terminal dilated appendage (*apice trifidum,* Koch). Cal. and Pet. spreading. (Germen not twisted, Koch.) p. 356.

III. HEXANDRIA. Aristolochiæ.

711. **ARISTOLOCHIA.** Cal. of 1 L., superior, bellying at base. Cor. 0. Stigma with 6 lobes. Caps. with 6 cells and many seeds. *L. alternate, deeply cordate.* p. 324.

XXI. MONŒCIA.

Sprengel forms the first order of *Monœcia,* of plants which have the barren and fertile flowers on the same receptacle. This arrangement has some advantages, as the number of stamens is often uncertain; but it is not always clear whether the flowers should be considered as growing on a common receptacle, or merely as forming a spike. He includes in it *Calla, Arum, Eriocaulon, Ficus,* and *Euphorbia.* Zostera, Lemna - Callitriche

I. MONANDRIA.

718. **EUPHORBIA.** Fl. without Cal. or Cor., the barren surrounding a fertile one on a stalked germen; the whole included in a common involucrum. Styles 3, cloven. Caps. 3-hunched. *Plants abounding in a milky juice. L. scattered, undivided.* Euphorbiaceæ. p. 325.

709. **CYNOMORIUM.** Barren and Fertile Fl. in a common amentum. Scales peltate, with chaff intermixed. *Barren.* Cal. embracing the base of the single stamen. *Fertile.* Germen crowned with a one-sided scale. Style 1. Stigma hemispherical. Seed 1, roundish. *A fleshy, parasitic, leafless, purplish-brown plant.* Balanophoreæ. p. 323.

752. **ZANNICHELLIA.** *Barren Fl.* without Cal. or Cor. *Fertile* solitary; Cal. of 1 L.; no Cor. Germens from 2 to 6, each with a stalked seed in a sessile capsule. *Floating or submersed, with linear, entire L.* Potameæ. p. 348.

753. **NAIAS.** *Barren.* Anther in a bi-tricuspidate sheath. *Fertile.* Sheath as in the barren Fl. Style short, subulate. Stigmas 2 or 3. Fr. one-seeded. *Aquatic plants. L. opposite or in threes.* Potameæ. p. 348.

II. TRIANDRIA.

824. **SPARGANIUM.** Catkins globose. Cal. of 3 or 4 scales. Cor. 0. Fertile Fl. in the lower catkins. Style simple, acute. Drupe dry, operculate, with 1 or 2 seeds. *Smooth aquatic plants, with a solid, leafy, zigzag stem.* Typhaceæ. p. 379.

823. **TYPHA.** Fl. in a dense, soft catkin, in two parts; the upper barren. Cal. 0. Cor. 0. Recept. hairy or scaly. Anthers 2–4 on a common filament. Style capillary. Seed

solitary, ovate, with capillary bristles attached to its stalk. *Aquatic, upright herbs. L. linear, erect, entire, smooth; none on the upper part of the stem.* TYPHACEÆ. p. 379.

834. **ELYNA.** Scales tiled, each covering a spikelet of 2 Flts. Lower Flt. fertile, furnished with a glume, of which the margins are united at the base; upper barren. *Habit of* Carex. CYPERACEÆ. p. 383.

835. **KOBRESIA.** Scales tiled; the lower covering a spikelet of 1 fertile Flt., or one fertile and one barren or neuter; the upper with barren Flts. only. *Habit of* Carex. CYPERACEÆ. p. 383.

836. **CAREX.** Catkin imbricate. Cal. a simple scale. Perigone of barren Fl. 0; of fertile Fl. of one L., persistent, enclosing the seed like a seed-vessel. *Grass-like Herbs, with creeping or tufted roots.* CYPERACEÆ. p. 384.

854. **COIX.** Fl. glumaceous: *barren* uppermost, in spikes; *fertile* nearly solitary. Involucrum becoming hard, enclosing the seed. Style cloven. GRAMINA. p. 398.

III. TETRANDRIA.

679. **LITTORELLA.** *Barren Fl.* stalked; Cal. 4-leaved; Cor. 4-cleft; Sta. capillary, very long. *Fertile Fl.* sessile; Cal. 0; Cor. 3–4-cleft; Style simple, very long. Nut rugose, of one cell and one seed. *Small, stemless Herbs, with linear L.* PLANTAGINEÆ. p. 309.

716. **BUXUS.** *Barren Fl.* containing rudiment of a germen; Cal. 3-leaved; Pet. 2. *Fertile Fl.* superior; Cal. 4-leaved; Pet. 3; Styles 3. Caps. with 3 beaks and 3 cells. *Evergreen Shrubs, with rigid, smooth, opposite, quite entire L. Fl. clustered, axillary.* EUPHORBIACEÆ. p. 325.

720. **URTICA.** *Barren.* Cal. 4-leaved; Pet. 0; Nect. central, cup-shaped. *Fertile.* Cal. 2-leaved; Pet. 0; Stigma sessile, brush-like. Seed 1, superior, polished. *Stinging Herbs, with opposite undivided L. Fl. green.* URTICEÆ. p. 330.

733. **ALNUS.** Catkins separate. Cal. a simple permanent scale. *Barren Fl.* Scale 3-flowered; Cor. 4-parted. *Fertile.* Scale 2-flowered; Cor. 0; Styles 2. Nut compressed, without wings. *Trees, or Shrubs, with alternate, stalked L., and twin, deciduous stipules.* AMENTACEÆ. p. 342.

749. **ERIOCAULON.** Common Cal. imbricate, many-flowered. *Barren Fl.* in the middle. Cor. 4–6-parted. Sta. (in the European species) 4. *Fertile Fl.* in the circumference. Pet. 4. Style 1. Caps. superior, 2–3-celled. Seeds solitary. *Aquatic plants. L. from root, channeled. Scape erect.* ERIOCAULEÆ. p. 346.

694. **EUROTIA.** *Barren Fl.* Sta. inserted at the bottom of a 4-parted calyx. *Fertile.* Cal. tubuloso-urceolate, bidentate. Seed 1, in a very thin covering. Embryo in the circumference. CHENOPODIEÆ. p. 315.

IV. PENTANDRIA.

504. **XANTHIUM.** *Barren.* Invol. of many L. and many Fl.; Recept. chaffy; Cor. tubular. *Fertile.* Invol. of 1 L., prickly, divided into 2 one-flowered cells; Cor. 0. Seeds covered with the hardened involucrum. *Annuals. L. alternate.* COMPOSITÆ. p. 236.

505. **AMBROSIA.** *Barren.* Invol. of 1 L., many-flowered; Cor. funnel-shaped. *Fertile.* Invol. 1-flowered; L. hardening on seed, and forming a nut-like fruit. *Aromatic. Lower L. opposite; upper alternate, pinnatifid.* COMPOSITÆ. p. 236.

682. **AMARANTHUS.** Cal. of 3–5 L. Cor. 0. *Barren.* Sta. 3–5. *Fertile.* Styles 2–3. Caps. circumsciss, of one cell and 1 seed, with 3 beaks. *L. stalked, alternate, undivided.* AMARANTHACEÆ. p. 311.

243. **BRYONIA.** Cal. 5-cleft. Cor. 5-cleft. *Barren.* Anthers in 2 pairs, and a single one. *Fertile.* Style 3-cleft. Berry 3-celled; skin thin. *Herbaceous Climbers, with simple tendrils, and stalked, alternate, lobed L.* CUCURBITACEÆ. p. 129.

244. **MOMORDICA.** Cal. 5-cleft. Cor. 5-cleft, on the calyx. *Barren.* Anthers in 2 pairs and a single one. *Fertile.* Style trifid; Stigmas cloven. Fr. 3-celled, elastic, squirting the seeds from its base! *A perennial plant. L. cordate, alternate; no tendrils.* CUCURBITACEÆ. p. 129.

245. **CUCUMIS.** Cal. 5-cleft. Cor. 5-cleft. *Barren.* Anthers in 2 pairs and a single one. *Fertile.* Stigmas 3, thick, bipartite. Fr. 3-celled, with a thick, fleshy coat. Seeds ovate; margin acute. *Annuals, with lobed, alternate L. and simple tendrils.* CUCURBITACEÆ. p. 129.

V. POLYANDRIA; *i. e.*, WITH 8 OR MORE STAMENS.

A. *Flowers solitary.* CERATOPHYLLEÆ.

235. **CERATOPHYLLUM.** Cal. many-cleft. Cor. 0. *Barren.* Sta. 16–20. *Fertile.* Stigma nearly sessile, oblique. Drupe compressed. Nut solitary. *Branched, floating Herbs, with whorled, forked L., and axillary sessile Fl.* p. 127.

B. *Barren and Fertile Fl. in a spadix, and included in a common sheath.* AROIDEÆ.

[In the plants of this section there is nothing to determine whether each anther constitutes a barren flower, or whether they all form parts of one flower. The flowers being on a common spadix, and included in a common sheath, will, however, distinguish them from all monandrous genera of this order, except *Zostera,* where the anthers and germens are placed alternately along the linear spadix.]

819. **ARUM.** Fl. in a spadix, naked above, enclosed in a sheathing L. Cor. 0. *Barren Fl.* surrounding the spadix above the fertile. *Fertile.* Style 0. Berry with several seeds. *Smooth, stemless Herbs, acrid when fresh.* p. 378.

820. **CALLA.** Spadix covered with barren and fertile Fl. intermixed. Berry of many cells and many seeds. *An aquatic plant, with much the habit of* Arum. p. 378.

822. **AMBROSINIA.** Sheath of 1 L., divided by the spadix into two cells. Anthers sessile at the top of the posterior cell. Style simple at the base of the anterior cell. p. 378.

C. *Barren and Fertile Fl. in the same panicle, spike, or head, but not included in a common sheath.*

232. **MYRIOPHYLLUM.** Sep. 4. Pet. 4. *Barren Fl.* Sta. 8. *Fertile* below the barren. Stigmas 4, sessile. Drupes 4. Nuts solitary. *Aquatic Herbs, with whorled, pinnatifid L. Fl. in spikes, sometimes leafy.* HALORAGEÆ. p. 126.

217. **POTERIUM.** Cal. 3-leaved. Cor. deeply 4-cleft. *Barren.* Sta. 13–20. *Fertile.* Pistils 1 or 2. Nut coated, of 1 or 2 cells. *L. pinnate. Fl. in terminal spikes or heads.* ROSACEÆ. p. 121.

697. **THELYGONUM.** Fl. axillary. Cal. cloven. Pet. 0. *Barren.* Sta. 12–19. *Fertile.* Style 1. Caps. globose, 1-seeded. CHENOPODIEÆ. p. 317.

745. **SAGITTARIA.** Cal. 3-leaved. Pet. 3. *Barren Fl.* Sta. about 24. *Fertile,* in the lower part of the same panicle. Pet. numerous. Seeds many, bordered. *Erect Aquatics, without stems. Primary L. linear; others arrow-shaped. Fl. handsome.* ALISMACEÆ. p. 345.

D. *Barren Fl. in a spike or catkin, quite separate from the fertile.* AMENTACEÆ.

726. **FAGUS.** *Barren Fl.* Cal. 5-cleft. Cor. 0. Sta. 8–20. *Fertile.* Invol. 4-lobed, muricate, 2–3-flowered. Cal. superior, 5–6-cleft. Cor. 0. Styles 5–6. Nuts 2 or 3, invested with the spreading, fruit-like involucrum. *Large Trees, with stalked, alternate, undivided L. Fl. axillary.* p. 332.

727. **QUERCUS.** *Barren Fl.* Cal. about 5-cleft; Cor. 0; Sta. 5–10. *Fertile.* Invol. scaly, undivided; Cal. superior, 5–6-cleft; Cor. 0; Style 1. Nut solitary, coriaceous, closely invested at its base with the solid, scaly, hemispherical involucrum. *Trees, or Shrubs, with stalked, alternate, sinuate L.* p. 332.

728. **CORYLUS.** *Barren Fl.* Calyx a 3-cleft scale. Cor. 0. Sta. 8. *Fertile.* Cal. superior, obsolete. Cor. 0. Styles 2. Nut solitary, covered at base with the coriaceous, jagged, calyx-like involucrum. *Small Trees, or Shrubs. L. alternate, somewhat round, stalked, serrate, deciduous.* p. 333.

729. **CARPINUS.** *Barren Fl.* Calyx the rounded scale of a lengthened catkin. Sta. 10 or more. *Fertile.* Invol. of several scales; the outer deciduous. Cal. superior, in 3 deep, acute segments, permanent. Cor. 0. Styles 2. Nut ovate, angular. *Trees, with stalked, alternate, plaited, serrate, deciduous L.* p. 333.

732. **BETULA.** *Barren Fl.* Sta. 10–12, inserted on the ternate scales of a lengthened catkin; Cor. 0. *Fertile.* Cal. a peltate, 3-lobed, 3-flowered scale; Styles 2. Nut winged. *Trees, or Shrubs, with round, slender branches, and scattered, deciduous L.* p. 342.

734. **PLATANUS.** Catkins globose, scaly. *Barren Fl.* No Cal. or Cor. Sta. numerous. Fil. very short, thickened at top. *Fertile.* Scales clavate; Style simple. Nut club-like, mucronate. *Large Trees, with palmate L.* p. 342.

VI. MONADELPHIA.

A. *Barren Fl. in an amentum.* CONIFERÆ.

739. **PINUS.** *Barren Fl.* Anthers of 2 separate cells, on the under side of the scale-like connective. *Many modern writers consider what is here called a Connective as the scale of a secondary catkin, and the cells as separate anthers. In this view,* Pinus *would be diandrous;* Cupressus *and* Thuja *tetrandrous.* p. 343.

B. *Barren as well as fertile Fl. separate.*

710. **CYTINUS.** *Barren Fl.* Cal. 0; Cor. campanulate, 4-cleft; Sta. 8, sessile round the top of the column. *Fertile.* Cal. 0; Cor. campanulate, 4-cleft; Stigma capitate, with 8 furrows. Berry with 8 cells, 8 parietal placentas, and many seeds. *Parasitic. No L.* CYTINEÆ. p. 324.

714. **CROTON.** *Barren Fl.* Cal. 5-parted; Cor. 5-petalled; Sta. 15. *Fertile.* Cal. 5-leaved; Cor. 0; Styles 3. Caps. 3-hunched, 3-seeded. *The filaments are said to be sometimes all separate. In this case the three-hunched capsule will readily distinguish the plant.* EUPHORBIACEÆ. p. 325.

715. **RICINUS.** *Barren Fl.* Cal. 5-parted; Cor. 0; Fil. numerous, branched. *Fertile.* Cal. 3-parted; Cor. 0; Style trifid. Caps. 3-hunched, 3-seeded. EUPHORBIACEÆ. p. 325.

717. **ANDRACHNE.** Cal. 5-parted. *Barren Fl.* Pet. 5; Sta. 5, attached to rudiment of style. *Fertile.* Cor. 0; Styles 3. Caps. of 3 two-seeded hunches. EUPHORBIACEÆ. p. 325.

XXII. DIŒCIA.

I. MONANDRIA. POTAMEÆ.

756. **PHUCAGROSTIS.** No Cal. or Cor. *Barren Fl.* Fil. naked, thread-like; Anthers with 4 cells and 4 cusps. *Fertile.* Style thread-like; Stigma long, cloven. Germens 2, compressed. Seeds 2. *Habit much like that of* Zostera. p. 349.

II. DIANDRIA.

730. **SALIX.** Catkin imbricate. Cal. a scale. Cor. 0. Nect. 1 or more glands at the base. *Barren Fl.* Sta. 1–5, generally 2. *Fertile.* Stigmas 2. Caps. superior, of 1 cell and 2 valves. *Trees, or Shrubs, with stalked, undivided, generally alternate L., and round, flexible branches.* AMENTACEÆ. p. 333.

743. **VALLISNERIA.** *Barren Fl.* Sheath many-flowered; Spadix covered with small

sessile flowers, which detach themselves and float upon the surface; Cor. 3-parted. *Fertile Fl.* on a long spiral stalk; Sheath 1-flowered; Cal. 3-parted, superior; Cor. of 3 petals. Caps. with 1 cell and many seeds. *Floating plants, with long linear L.* HYDROCHARIDEÆ. p 345.

III. TRIANDRIA.

742. **UDORA.** Cal. 3-parted. Pet. 3. *Fertile Fl.* Styles 3, cloven; Stigmas long, feathery. Fr. of 1 cell and few seeds. *Aquatic plants, with long serrulate L.* HYDROCHARIDEÆ. p. 345.

790. **RUSCUS.** Cal. of 6 L. Pet. 0. Nect. ovate, tubular. *Barren Fl.* Sta. on top of a nectary. *Fertile.* Style 1. Berry superior, of 3 cells. Seeds in pairs. *Rigid evergreen plants. L. quite entire, continuous with stem. Fl. on the L.* ASPARAGEÆ. p. 363.

713. **EMPETRUM.** Cal. 3-parted. Pet. 3. *Barren Fl.* Sta. 3–9, capillary. *Fertile.* Stigmas 9. Berry superior. Seeds 9. *A low, evergreen Shrub. L. lineari-oblong, revolute. Fl. axillary.* EMPETREÆ. p. 324.

723. **FICUS.** Fl. on the inside of a hollow, fleshy receptacle. *Barren Fl.* Cal. 3-parted. *Fertile.* Cal. 5-cleft; Style lateral. Seeds imbedded in the receptacle. *Milky Trees, with rough, lobed L.* URTICEÆ. p. 331.

IV. TETRANDRIA.

708. **HIPPOPHAE.** *Barren Fl.* Sep. 2; Cor. 0; Anthers on the base of the calyx. *Fertile.* Cal. inferior, tubular, bidentate; Cor. 0. Berry with one seed, which is covered with a double membrane. *A thorny Shrub. L. scaly, quite entire. Fl. from the same buds, below the L.* ELÆAGNEÆ. p. 323.

360. **VISCUM.** *Barren Fl.* Cal. 0; Pet. 4, calyx-like, combined at base; Anthers sessile on the petals. *Fertile.* Cal. superior, forming a slight border; Pet. 4; Style 0. Berry with 1 seed. *Smooth parasitical Shrubs. Stem dichotomous. L. opposite or none, of a yellowish green, quite entire.* LORANTHACEÆ. p. 162.

735. **MYRICA.** Fl. in Catkins. Cal. a concave scale. Cor. 0. *Fertile Fl.* Styles 2. Berry superior, with 1 globular seed. *An aromatic Shrub, with scattered, undivided, serrate L. Catkins axillary.* AMENTACEÆ. p. 342.

V. PENTANDRIA.

722. **HUMULUS.** *Barren Fl.* panicled; Cal. 5-parted; Cor. 0. *Fertile Fl.* in a catkin; Cal. an oblique, undivided scale; Calyx-scales 1-flowered, at last covered by the enlarged bracts; Styles 2, filiform. Seed 1. *Climbing plants, with rough, divided L.* URTICEÆ. p. 331.

159. **PISTACIA.** *Barren Fl.* Raceme catkin-like; Cal. 5-cleft; Cor. 0. *Fertile.* Cal. 3–4-cleft; Cor. 0; Styles 3. Drupe dry. Seed usually 1. *Shrubs, with alternate, pinnate L.* TEREBINTHACEÆ. p. 74.

164. **CERATONIA.** Cal. 5-parted. Cor. 0. *Barren Fl.* Fil. 5 or 6, very long, inserted under the margin of an hypogynous disc. *Fertile.* Style filiform. Legume quadrangular, coriaceous. Seeds imbedded. *A large Tree, with fertile flowers on the trunk. L. pinnate.* LEGUMINOSÆ. LOMENTACEÆ of Linn. p. 75.

VI. HEXANDRIA. ASPARAGEÆ.

791. **SMILAX.** Sep. 6, corolla-like. Cor. 0. *Barren Fl.* Stamens on the base of the sepals. *Fertile.* Style very short; Stigmas 3. Berry superior. Seeds 1–3. *Climbing, prickly plants.* p. 363.

792. **TAMUS.** Cal. 6-parted. Cor. 0. *Barren Fl.* Sta. on the base of divisions of the calyx. *Fertile.* Style trifid; Stigmas flat, cloven. Berry inferior, 3-celled. Seeds in pairs. *Smooth, herbaceous, climbing plants. L. alternate, cordate at base.* p. 363.

VII. OCTANDRIA.

731. **POPULUS.** Catkin cylindrical. Cal. a lacerated scale. Cor. top-shaped, oblique, undivided. *Fertile Fl.* Stigmas 4 or 8. Caps. superior, of 1 cell and 2 valves. Seeds crested. *Trees, with gummy buds. Stip. in pairs. L.-stalk compressed laterally.* AMENTACEÆ. p. 341.

531. **DIOSPYRUS.** Cal. and Cor. each 4–6-cleft. Sta. on base of corolla. Berry of 8–12 cells and as many seeds. Some of the Fl. are complete. *A Tree, with alternate, undivided L.* EBENACEÆ. p. 244.

259. **RHODIOLA.** Cal. in 4, deep segments. Pet. 4. Nect. 4, notched. *Fertile Fl.* Pistils 4. Caps. 4, many-seeded. *L. fleshy, but flat. Root very thick, above ground. Stem simple.* CRASSULACEÆ. p. 132.

VIII. ENNEANDRIA.

719. **MERCURIALIS.** Cal. 3-parted. Cor. 0. *Barren Fl.* Sta. 9–12; Cells of Anther 2, globose. *Fertile.* Styles 2. Caps. 2-hunched, 2-seeded. L. opposite, stalked, *undivided.* EUPHORBIACEÆ. p. 330.

741. **HYDROCHARIS.** Cal. tripartite. Pet. 3. *Barren Fl.* Inner Fil. beaked. *Fertile.* Styles 6. Caps. inferior, of 6 cells and many seeds. *Aquatics, with reniform, floating L.* HYDROCHARIDEÆ. p. 345.

IX. DECANDRIA. CORIARIÆ.

152. **CORIARIA.** Cal. 5-parted. Pet. 5, very small, gland-like. *Fertile.* Styles 5. Caps. 5, 1-seeded. *A small Shrub, with opposite, entire L., and the flowers in terminal racemes.* p. 72.

X. MONADELPHIA. CONIFERÆ.

736. **EPHEDRA.** *Barren.* Catkin few-flowered; Calyces imbricated, cloven; Cor. 0; Sta. 7. *Fertile.* Cal. imbricate, the Scales thickening and forming a two-seeded berry; Cor. 0; Styles 2. *Woody.* p. 343.

737. **TAXUS.** *Barren Fl.* without calyx or corolla. Anthers of 3–8 cells, on the under side of a peltate, lobed connective. *Fertile Fl.* solitary. *Cal.* cup-shaped, quite entire. Cor. none. Style 1. Seed solitary, coated by the pulpy calyx, open at top. *An evergreen Tree, with small linear L.* p. 343.

738. **JUNIPERUS.** *Barren Fl.* Cal. the scale of a catkin; Cor. none; Sta. 3. *Fertile.* Scales few, opposite, finally becoming pulpy and uniting into a berry with 3 seeds. *Evergreen, aromatic Shrubs, with small sharp L.* p. 343.

XXIII. CRYPTOGAMIA.

Order I. (the only one here introduced). FILICES of Linnæus, with the addition of *Lycopodium. Acotyledoneæ vasculares,* DC. *Cryptogamiæ ductulosæ,* BAB.

I. CHARACEÆ. Plants with sessile globules (anthers?) and spirally covered seeds.

II. EQUISETACEÆ. Plants with terminal catkins; the Scales bearing seed-vessels on the under surface. Seeds accompanied by spiral threads, ending in dilated appendages, perhaps serving as anthers.

III. FILICES. Fructification in capsules of one cell, with 2 valves, and splitting into 2 parts, placed on the back or margin of the frond. *In* Botrychium *and* Ophioglossum, *the Capsules are not placed at the back, but in a separate portion of the frond.* Vernation, except in these two genera, circinate.

A. Capsule furnished with an elastic ring.

a. Fruit dorsal.

- **i.** Polypodieæ. Clusters of Fruit from a point on the veins, or from a small terminal disc.
- **ii.** Asplenieæ. Clusters disposed along the veins.
- **iii.** Pterideæ. Covering of the Fruit dependent on, or connected with, the margin of the frond.

b. Fruit marginal.

- **iv.** Hymenophylleæ. Fruit in a sort of marginal cup.

B. Capsule without a ring.

- **v.** Osmundeæ. Vernation circinate. Caps. on the altered extremity of the frond.
- **vi.** Ophioglosseæ. Vernation straight! Caps. sessile, on a separate branch of the frond.

IV. MARSILEACEÆ. Caps. not splitting, placed near the root, and at the base of the L.

V. LYCOPODIACEÆ. Stem leafy. Caps. axillary, splitting. Seeds a fine powder.

I. CHARACEÆ.

916. **CHARA.** Anther? lateral, sessile, globose; the cover splitting into several portions. Fr. covered with spiral valves, and containing minute granules, which appear at last to unite in a single seed. *Green, aquatic, leafless plants.* p. 421.

II. EQUISETACEÆ.

917. **EQUISETUM.** Catkin terminal. Scales peltate, bearing Spore-vessels on the under surface. Spores accompanied by spiral threads. *Leafless plants, with a jointed stem and branches.* p. 422.

III. FILICES.

A. *Capsule furnished with an elastic ring.*

a. *Fruit dorsal.*

i. Polypodieæ.

918. **POLYPODIUM.** Clusters of Fr. without an indusium. p. 423.

919. **POLYSTICHUM.** Indusium peltate, attached by its centre. p. 423.

920. **LASTRÆA.** Indusium reniform, attached in the sinus. p. 423.

921. **CYSTEA.** Indusium attached by its hooded base under the clusters, with a lengthened, fringed, free extremity. p. 424.

922. **WOODSIA.** Clusters with an inferior indusium divided into capillary segments. p. 424.

ii. Asplenieæ.

923. **GRAMMITIS.** Indusium 0. p. 424.

924. **ATHYRIUM.** Clusters oblong, curved. Indusium opening towards the central nerve. p. 424.

925. **ASPLENIUM.** Clusters oblong, straight. Indusium nearly flat, opening towards the central nerve or midrib. p. 424.

926. **CETERACH.** Lateral Veins anastomosing. Indusium a narrow membrane, hardly distinguishable from the scales, with which the whole back of the frond is covered. p. 425.

927. **SCOLOPENDRIUM.** Clusters long, in pairs; the Indusia opening towards each other. p. 425.

928. **BLECHNUM.** Clusters in a continued line, parallel to the midrib of the pinna. Pinnæ of the fertile Frond much narrower than those of the barren. p. 425.

929. **WOODWARDIA.** Clusters in separate cells along the midrib. Veins somewhat reticulate at their base. p. 425.

iii. PTERIDEÆ.

933. **STRUTHIOPTERIS.** Clusters on the whole under surface of the fertile Frond, covered by the involute margin. Barren Frond different. p. 426.

930. **ALLOSORUS.** Clusters near the margin of frond, which is rolled in over them. Indusium 0. Barren and fertile Fronds different. p. 426.

932. **NOTHOLÆNA.** Clusters scattered on the margin and base of the pinnules, partially covered by the rolled-in margin of the frond. *Under side covered with chaff-like hairs.* p. 426.

931. **CHEILANTHES.** Margin of Frond membranous: Clusters covered by its inflexed portions. Frond, and Venation of its divisions, pinnate. p. 426.

934. **PTERIS.** Margin of the Frond continuous, membranous, sharply doubled down over the clusters of fruit. p. 426.

935. **ADIANTUM.** Clusters on the under side of inflexed membranous portions of the frond. Venation flabellate! p. 426.

iv. HYMENOPHYLLEÆ.

936. **TRICHOMANES.** Cup entire. Caps. on a central receptacle, the point of which extends beyond the cup. p. 426.

937. **HYMENOPHYLLUM.** Cup of 2 valves. Caps. on a short central receptacle. p. 426.

B. *Capsule without a Ring.*

v. OSMUNDEÆ.

938. **OSMUNDA.** Caps. clustered in a branched spike. p. 426.

vi. OPHIOGLOSSEÆ.

939. **BOTRYCHIUM.** Caps. distinct, disposed in a compound spike attached to a pinnate frond. p. 426.

940. **OPHIOGLOSSUM.** Caps. connate, disposed in a simple, 2-rowed spike, attached to an undivided frond. p. 426.

IV. MARSILEACEÆ.

941. **MARSILEA.** With creeping Runners, but no true Stem. Fr. 2–6, stalked, on the base of the L.-stalk. L. quaternate, on long stalks. p. 427.

942. **PILULARIA.** With creeping Runners, but no true Stem. Fr. solitary, on a short stalk at the base of the rush-like L. p. 427.

943. **SALVINIA.** Plant floating. Fr. membranous, clustered on a short downward branch among the radical fibres. p. 427.

944. **ISOETES.** Fruit membranous, placed within the concave, dilated base of the L. Stem 0. p. 427.

V. LYCOPODIACEÆ.

945. **LYCOPODIUM.** Fr. of one cell, opening by a transverse fissure. L. alternate, in 2–4 rows. *In some species there is also another form of fruit, with* 3 *or* 4 *bunches and as many large seeds.* p. 427.

DICOTYLEDONES.

THALAMIFLORÆ.

I. RANUNCULACEÆ. Juss

Stamens more than 10 (except occasionally in *Myosurus* and *Ceratocephalus*). Anthers adnate. Germens more than one (except in *Delphinium peregrinum*, and sometimes in *D. Ajacis*). Leaves sheathing at base. In *Nigella* the seed-vessels are more or less united.

The Ranunculaceæ are divided into the following Tribes:—

1. CLEMATIDEÆ.—Seeds solitary. Estivation valvular . . . . . . Gen. 1, 2.
2. ANEMONEÆ.—Seeds solitary. Estivation imbricate. Petals 5, without a nectariferous pore at the base . . . . Gen. 3–5.
3. RANUNCULEÆ.—Seeds solitary. Estivation imbricate. Petals with a nectariferous pore or scale at the base . . . . Gen. 6–8.
4. HELLEBOREÆ.—Seeds several in each carpel. Anthers extrorse . . Gen. 9–18.
5. PÆONIEÆ.—Seeds several. Anthers introrse . . . . . . Gen. 19–21.

Tribe I. *CLEMATIDEÆ.* D.C

1. CLEMATIS. L.

A. *Invol.* 0. *Carpels with feathery tails.*

1. **integrifolia.** L. Stem erect. L. ovate or ovato-lanceolate, quite entire. Stalks 1-flowered. Fl. nodding. **p.** 6, 7. *Moist meadows.* Austr. Carn. Pyr.

2. **recta.** L. Stem erect. L. pinnate. Lts. stalked, ovato-lanceolate, quite entire. **p.** 5, 6. *Dry hills.* mdt. Fr. It. s. e. G.

– 3. **Flammula.** L. Stem climbing. L. bipinnate. Lts. entire and three-lobed. **S.** 7, 9. *Dry hills.* Coasts of Mdt.

4. **Vitalba.** L. Stem climbing, angular. L. pinnate. Lts. ovato-lanceolate, inciso-dentate, acuminate, truncato-cordate at base. Pan. not exceeding L. **S.** 7. *Hedges and thickets.*

B. *Involucre* 0. *Tails of Carpels not bearded.*

– 5. **Viticella.** L. Stems climbing. L. compressed. Lts. ovate, margin entire. Stalks solitary, 1-flowered. **S.** 5–8. *Thickets.* Trieste and n. e. It.

C. *Involucre of one L. Carpels with bearded tails.*

6. **cirrhosa.** L. Stalks 1-flowered, nodding. L. somewhat cordate, dentate, simple, or ternate. **S.** 9–11. Sic. Cors. Calab. Bari. ✓

7. **balearica.** Rich. Stalks 1-flowered. L. ternate. Lts. stalked, three-lobed, inciso-dentate. **S.** 10. *Thickets.* Bari. var./6. Gr

2. ATRAGENE. L.

1. **alpina.** L. Lts. serrate. Pet. spatulate. **w.** 7–8. *Rocky woods.* Alps. ✓

Tribe II. *ANEMONEÆ.* D.C

3. THALICTRUM. L. ◇ mac

A. *Carpels three-edged, winged, not striate, stalked.*

1. **aquilegifolium.** L. Pan. corymbose. Fr. smooth. Stipels at the ramifications of the L.-stalk. **p.** 5–7. *Mountain woods.* ✓

B. *Carpels furrowed and stalked.*

2. **alpinum.** L. Stem quite simple. Rac. ✓

simple, terminal. Fruit-stalks reflexed. Carpels with a hooked point. **p.** 6. *Mountain pastures.* Br. Pyr. e. Alps.

3. **calabricum.** Stem nearly simple, leafy at base, nearly naked above. Fr. erect. Carpels with a straight, subulate point. **p.** 5, 6. *Woody hills.* Sic.

C. *Carpels furrowed, sessile.*

i. *Pan. broad. Fl. scattered. L. ternately pinnate.*

4. **fœtidum.** L. Viscido-pubescent. Stalks
✓ of Lts. nearly terete, the ultimate almost capillary. "Stigmate eum lateribus suis retrorsùm accumbentibus."—Koch. Stam. drooping. **p.** 6, 7. *Rocks.* Mt. Ventous. Pennine Alps. Boh.

β. *acutilobum*, DC.

γ. *alpestre*, Gau. without hair.

5. **sylvaticum.** Koch Stem straight or slightly serpentine, somewhat pruinose. Stalks of Lts. compresso-terete. Stam. pendulous. **p.** 6, 7. *Woods.* B. de Boul. Palatinate. Sil.

6. **minus** L Stem zigzag. Stalks of Lts.
✓ with prominent lines. Stipels 0. Branches of Pan. nearly horizontal. Stam. pendulous. **p.** 5, 6. *Hills and dry pastures.*

β. *pubescens*, Schl. L. with glandular hairs.

✓ γ. *Jacquinianum*, Koch. Primary divisions of L. stipelled.

7. **majus.** Jacq. Stem nearly straight. Partial stalks of Lts. with prominent lines, the lower very widely spreading. Stipels 0. Branches of Pan. erecto-patent. Stam. pendulous. **p.** 5–7. *Meadows and margins, scattered.*

8. **elatum.** Jacq Stem and branches deeply furrowed, pruinose. L. dull. Stipels 0. Pan. diffuse with straight branches. Fl. in whorls or in imperfect umbels. Flower-stalks and Stam. porrect. R. fibrous. **p.** 6, 7. *Dry hills.* Fiume.

9. **lucidum.** L. Stem straight. L. green, stipelled; the Auricles adpressed. Branches of Pan. nearly erect. Stam. porrect. *Between* T. minus *and* T. flavum. *The Fl. and Carpels are much smaller than in the former, and the scattered Fl. and somewhat triangular outline of the L. distinguish it from the latter.* **p.** 6, 7. France, *rare.*

ii. *Pan. broad. Fl. scattered. L. pinnately decompound.*

✓ 10. **simplex** L. Stem furrowed. Lts. dull, oblongo-cuneate. Auricles of upper L. ovato-oblong, acuminate. Branches of Pan. racemose. Fl. nodding. R. creeping. **p.** 6, 7. *Grassy hills.* Harz. Vallais. Dau. n. It. *Occ.*

11. **galioides.** Pers Resembles 10. Lts. linear, shining. **p.** 7. *Meadows and heaths.* Strasb. e. Alps. *Rare.* var. of 12. Gr & G

iii. *Pan. contracted. Fl. crowded. L. ternately pinnate. Lts. somewhat cordate, obtusely trifid, glaucous beneath.*

12. **angustifolium.** L. Stem furrowed. Auricles of upper L. ovate, acuminate. Stam. ✓ erect. R. fibrous. **p.** 6, 7. *Moist meadows.* Fr. G. *The Sheaths and Stalks of the lower L. are almost always pubescent.*

β. *nigricans*, DC. Lts. entire, except the terminal one. var of 13. Gr & G

13. **flavum.** L. Stem furrowed. Auricles oblong or acuminate, broader than the middle ✓ of the sheath. Lower ramifications of petiole stipelled. Fl. and Stam. porrect. R. creeping. **p.** 6, 7. *Moist meadows and banks.*

β. *nigricans*, Jacq.

14. **rufinerve.** Lejune & Courtois "Stem furrowed, shining. Lts. quite smooth, glaucous beneath. Auricles of the upper L. ovato-acuminate. Stipels 0. Pan. fastigiate. Branches erect. Fl. crowded on the tops of the branches. Fl. and Stam. porrect. R. creeping. **p.** 6, 7. At Blisten, near Spa. *All L. with a broad triangular outline.*"—Koch.

15. **exaltatum.** Gaud Stem furrowed, shining. L. and sheaths sprinkled with sessile glands. Auricles of L. rounded, narrower than the diameter of the sheath. Fl. crowded at the tops of the branches. Stam. porrect. **p.** 7, 8. *Sandy shores of the Adda.*

D. *R. grumose! Sep. exceeding Stam.*

16. **tuberosum.** L. Fl. solitary, or in a loose Corymb. Bracts sessile. **p.** 6. *Barren hill pastures.* Carcassone, &c. Pyr.

✓ macrocarpum

4. ANEMONE. L

A. *Carpels with bearded tails. Pet.* 6.

i. *Bracts palmate, sessile.*

1. **vernalis.** L. L. pinnate, nearly hairless. Lts. cuneato-lanceolate, trifid. Fl. erect. Invol. very villous. Pet. straight, elliptic-oblong. **p.** 6–8. *High pastures.* Alps. Pyr. Sil. Prussia. ✓

2. **Halleri.** All L. pinnate, villous. Lts. ✓ pinnatifid; divisions lineari-lanceolate. Flower erect. Pet. ovato-lanceolate. **p.** 7, 8. *Very high pastures.* Alps.

pratensis L. flowers nutant
sepals apiculate, a little ✓
longer than the stamens

patens. L page 428. ✓

✓ 3. **patens.** L. L. ternate, divisions somewhat tripartite. Segments oblong, incise at top. **p.** 4. *Open hills and heaths.* e. Ger.

✓ 4. **Pulsatilla.** L. L. bipinnate, triply pinnatifid. Lts. multipartite. Segments linear, acute. Fl. nodding. Pet. spreading. **p.** 4, 5. *Open hills.*

β. *lilacina,* Sw. Fl. erect, somewhat before the L.

ii. *Bracts ternate, stalked.*

✓ 5. **alpina.** L. L. ternately decompound. Lts. stalked, pinnately inciso-serrate. Bracts like the L. Tail many times longer than carpel. *Fl. white.* **p.** 6–8. *Mountain meadows.* m. Europe.

β. *millefoliata,* Bert. Lts. very numerous, small, ovate, pinnatifido-incise.

✓ γ. *sulphurea.* L. very villous. Lts. lanceolate, acuminate. Fl. yellow.

B. *Carpels without tails.*

i. *Bracts sessile, divided.*

6. **coronaria.** L. L. ternate. Lts. multifid. Segments linear, mucronate. Pet. 6, oval, approximate. **p.** 3. *Meadows and cultures.* Fr. It.

7. **pavonina.** DC. L. tripartite. Segments cuneate, inciso-dentate. Pet. 10–12, sometimes numerous, lanceolate, very acute. **p.** 3. Prov. Nice. Tuscany. var of 8 Gr r G

✓ β. *fulgens.* Pet. obversely lanceolate. *Vyds.* Gasc. *About Nice,* A. pavonina *is abundant, but always with many Petals and no Stamens. Fulgens is scarcer, with* 6 *large obtuse Pet. In gardens I have seen both Fl. from one root.*

8. **hortensis.** L. L. tripartite. Segments cuneate, inciso-dentate. Pet. 10–12, oblong, obtuse. **p.** 3, 4. *Thickets and pastures.* s. Eur.

9. **palmata.** L. L. cordato-orbicular, obtusely lobed, toothed. Bracts trifid. Pet. 10–12. **p.** 2. *Open pastures.* Hyères. Sard. Sic.

ii. *Bracts stalked.*

10. **narcissiflora.** L. L. palmato-partite, villous. Div. inciso-dentate. Segments linear, acute. Bracts trifid at the top. Fl. in umbels. **p.** 5–7. *Calc. mns.* m. Eur.

11. **baldensis.** L. R. fusiform. L. three times ternate. Lts. stalked, multipartite. Segments linear. Bracts multifid. Pet. 8–10, *pink.* **p.** 6, 7. *Rocky.* Penn. Alps. Mte. Baldo. Tyrol.

12. **sylvestris.** L. Root fibrous. L. 3–5-nate. Lts. inciso-dentate at top. Pet. 6, *white.* ✓ Fl. solitary. Fruit very hirsute, with a small, very short style. **p.** Spring and Autumn. *Shade.* Alps. Piedm. G.

13. **trifolia.** L. L. ternate. Lts. ovato-lanceolate, acute, dentate, sessile. Pet. 5, ✓ elliptic, obtuse. **p.** 4–6. *Shady hills.* s. Fr. n. It.

14. **nemorosa.** L. R. horizontal. L. 3–5- ✓ nate. Lts. trifid, inciso-dentate, lanceolate, acute, somewhat stalked. Pet. 6, elliptic, *white or purplish, very rarely bluish.* **p.** 4, 5. *Shade.*

15. **apennina.** L. L. twice ternate. Lts. stalked, lanceolate, inciso-dentate, acute. Bracts ternate, inciso-dentate. Pet. 12–14, oblongo-linear, *blue.* **p.** 4. *Woods.*

16. **ranunculoides.** L. L. 3–5-nate. Lts. somewhat trifid, inciso-dentate. Bracts hardly ✓ stalked, tripartite 6, inciso-dentate. Scape usually 2-flowered. Pet. 5, 6, elliptic, *yellow,* downy beneath. **p.** 5, 6. *Shady hills.* m. Europe.

iii. *Bracts sessile, undivided, almost close to Fl.!*

17. **Hepatica.** L. L. cordate, three-lobed. ✓ Lobes very entire, ovate, acute. Stalks somewhat hairy. **p.** 2–4. *Shade.* m. and s. Europe.

5. ADONIS. L.

A. *annual.*

1. **autumnalis.** L. Cal. hairless. Pet. 6–8, concave! connivent, hardly exceeding Cal., ✓ *scarlet.* Carpels in an oblong head; point terminal, acute. **a.** 6–8. *Corn.* s. e. Eng. Fr. It. Istria.

2. **flava.** Vill. Cal. hairless, loose at the base. Pet. flat, oblong, twice as long as Cal., *orange or yellow.* Carpels in an oblong head. **a.** 6, 7. *Cult.* s. Fr. n. It. Sw. var of 4. Gr r G

3. **micrantha.** DC. Cal. hairless, firm at base. Pet. flat, oblong, equalling Cal. Carpels few, in a short, ovate head, crowned with straight conical styles. *Fl. small, orange or yellow. Corn.* s. F. var of 1. Gr r G
hairless. Gr r G.

4. **æstivalis.** L. Cal. hispid at base. Pet. oblong, obtuse, twice as long as Cal. Carpels in an oblong head, reticulato-tubercled. Style terminal. **a.** 6, 7. *Corn.* m. Eur. 2 dentate ✓

5. **flammea.** Jacq. Cal. hispid at base. Pet. flat, oblong, acute, exceeding Cal. Carpels in a cylindrical head, not toothed. Styles lateral. ✓ *Fl. large, orange.* **a.** 6–9. *Corn.* Germ. Fr.

D.G

6. **dentata.** Cal. hispid at base. Pet. flat, oblong, hardly exceeding Cal., *flame-coloured.* Carpels tuberculoso-dentate. **a.** 6–7. *Corn.* Provence. . . no 4 Gr v G.

B. *Perennial. Carpel with a hooked point.*

✓ 7. **vernalis.** L. Lower L. reduced to sheathing scales; upper sessile, multifid. Segments quite entire. Carpels velvety. Pet. 10–12, somewhat eroso-dentate at the top. **p.** 4, 5. *Dry hills.* Fr. G. Sw. It.

✓ 8. **pyrenaica.** D.G. Root L. ternate, on long stalks. Lts. multipartite. Uppermost L. sessile, multifid. Segments linear, quite entire. Carpels smooth, in an ovate head. Pet. 8–10, toothless. **p.** 7. Val. d'Eynes in e. Pyr.

9. **distorta.** "Stem flexuose. Root L. tufted, their stalks longly dilated at the base. Pet. obversely lanceolate, spatulate. Carpels wrinkled, in a spherical head. **p.** 7, 8. *High mns.* Central Apenn."—Bertol. *The much longer dilated part of the L.-stalk seems the chief distinction from* 8.

Tribe III. *RANUNCULEÆ.* DC

6. MYOSURUS. L.

✓ 1. **minimus.** L. Scape as long as L.; a Spur at base of each Sepal. **a.** 5. *Cult. occ.*

7. CERATOCEPHALUS. Mönch

Pers

✓ 1. **falcatus.** "Carpels channeled between the protuberances."—Koch. Horns of the Pericarp falcate. **a.** 4, 5. *Corn.* Coasts of Mdt. Vienna. Ulm.

2. **orthoceras.** DC "Carpels crested between the protuberances."—Koch. Horns straight. **a.** 3, 4. Prag.

8. RANUNCULUS. L.

A. Nect. a naked pore. Carpels transversely wrinkled. Pet. white, claw usually yellow.
  - **i.** Rec. hairless. Sp. 1, 2.
  - **ii.** Rec. hairy. Sp. 3–7.

B. Nect. membranous. Carpels not wrinkled, the narrow keel prolonged into a Beak. Fl. white.
  - **i.** L. divided, not nerved. Sp. 8–15.
  - **ii.** L. nearly or quite entire, nerved. Sp. 16–22.

C. Nect. a fleshy scale. Carpels bordered. Fl. yellow.
  - **i.** L. undivided. R. fibrous. Sp. 23–28.
  - **ii.** L. entire, or slightly lobed. R. grumose. Sp. 29–32.
  - **iii.** L. divided. R. grumose. Stem scape-like. Sp. 33–42.
  - **iv.** L. compound, or deeply divided. R. fibrous. Stem leafy.
    - **a.** Carpels without spines, tubercles, or wrinkles.
      - * Fruit-stalks not furrowed. Sp. 43–50.
      - ** Fruit-stalks furrowed. Sp. 51–56.
    - **b.** Carpels wrinkled, on an oblong head. Sp. 57.
    - **c.** Carpels tubercled. Sp. 58–61.
    - **d.** Carpels spinous. Sp. 62–65.

A. *Nect. a naked pore. Carpels transversely wrinkled, not margined. Pet. white, claw mostly yellow.*

i. *Rec. hairless. L. all reniform,* 3–5-*lobed.*

carnosus Guss.

1. **Lenormandi.** Sch. Carpels acuminate. Pet. twice Cal. *The Stipules are said to be large, and more detached from leaf-stalk than in* 2. **p.** 5, 6. *Running water, occ.* ✓

2. **hederaceus.** L. Carpels obtuse. Pet. hardly exceeding Cal. **p.** 5–8. *Running water.* ✓

ii. *Rec. hairy. Lower L. divided into capillary segments.*

3. **tripartitus.** DC. Carpels obtuse. Pet. hardly exceeding Cal. Segments of lower L. spreading in all directions. Stip. of upper L. nearly free. **p.** 5–7. *Peaty pools.* n. Fr. ✓

4. **aquatilis.** L. Carpels apiculate. Segments of lower L. spreading in all directions. Stip. of upper, 3–5-lobed L. united to stalk for 2-3rds of their length. **p.** 5–7. *Still water. Carpels about* 40. ✓

β. *cæspitosus.* Carpels 25–30.

γ. *Baudotii.* God. Carpels about 100. ✓

δ. *Petiveri.* Stip. attached for 1-3rd of their length. Claws yellow. ped. longer than leaves. ✓

Loyd

ε. *hololeucos.* Claws white.

Trichophyllus Chaix

ζ. *paucistamineus.* Koch Sta. about 12. no fl. L. ✓

5. **fluitans.** Lam. Carpels apiculate. Segments of L. elongated, parallel. L. on long stalks. Pet. 5–12. **p.** 6, 7. *Running water.* ✓

divaricatus Schrank

6. **circinnatus.** Sibt. Segments of lower L. on a plane; outline circular. L. nearly or quite sessile. **p.** 6–8. *Pools and ditches.* ✓

7. **Bachii.** Carpels apiculate, in oblong heads! Segments of lower L. nearly parallel. **p.** Sayn.—Wirtgen.

B. *Nect. membranous. Carpels not wrinkled, the narrow keel prolonged into a Beak.*

i. *L. divided, not nerved. Fl. white.*

✓ 8. **rutifolius.** L. Cal. smooth. Pet. 8–10, with a darker claw. Root L. bipinnate. Lts. tripartite. Stem 1–3-flowered. **p.** 7, 8. *Snowy.* e. Alps.

9. **anemonoides.** Zahlbruckner Cal. smooth. *Pet. linear, oblong.* Root L. biternate. Lts. tripartito-multifid; divisions linear. Stem with 1 or 2 L. **p.** 3, 4. *Pine-woods.* Upper Styr. and lower Austria.

✓ 10. **Seguieri.** Vill Cal. smooth. Pet. rounded, obovate. Root L. palmato-multifid; outline cordato-subrotund; divisions acuminate. Stem 1–3-flowered. Beak of Fr. slender, hooked. **p.** 7, 8. *Very high* Alps. *Rare.*

✓ 11. **aconitifolius.** L. Cal. smooth. L. palmato-partite, divisions trifid, acuminate, inciso-serrate. Stem many-flowered. Beak of Fr. slender, hooked. **p.** 5–8. *Woody mns.* red. pub

a. Root L. 3–5-part. Bracts lanceolate, serrate. Stem slender, hairless.

β. heterophyllus, Lap. Root L. tripartite. Bracts lanceolate, serrate. Stem stout, villous.

✓ *γ. platanifolius.* L Root L. 5–7-partite. Segments acuminate. Bracts linear, entire. red. gl

δ. dealbatus, Lap. L. hoary beneath.

12. **Traunfellneri.** Hoppe Cal. smooth. Stalk furrowed. Root L. tripartite; outline reniform; middle division trifid; lateral deeply cloven. Stem with 1 Fl. and usually 1 linear undivided Leaf. **p.** 6. *Stony.* e. Alps.

13. **alpestris.** L. Cal. smooth. Stalk furrowed. Root L. cordato-subrotund, 3–5-cleft. Divisions obovate, inciso-crenate at top. Stem with 1 Fl. and one 3-cleft, or linear undivided L. **p.** 7, 8. *High.* Alps. Jura. Pyr.

14. **crenatus.** Waldstein Cal. smooth. Stalk furrowed. Root L. subrotund or reniform, undivided, or three-lobed at top; upper crenatures larger. Stem with about 1 Fl., and 1 linear, undivided L. **p.** 8. *High moist granite rocks.* Styria.

15. **glacialis.** L. Cal. covered with dark hairs. Root L. ternate, tripartito-multifid. Stem 1–5-flowered. Beak of Fr. straight. **p.** 7, 8. *Snowy.* Alps.

ii. *Outer L. nearly or quite entire, nerved. Fl. white, except in* gramineus.

16. **lacerus.** Bell L. cuneate, laciniate at top. Stem smooth, branched, many-flowered. Cal. adpressed. Pet. white. **p.** 6, 7. *Rich pastures.* Alps of Dau. Vallais. *Perhaps a hybrid.*

17. **magellensis.** Root L. reniformi-semicircular, obtusely toothed, the upper teeth larger. Scape 1-flowered. Beak of Carpels subulate, recurved. **p.** 7. Abr.

✓ 18. **parnassifolius.** L. Root L. cordate, quite entire. Stem L. few, sessile; upper lanceolate. Style recurved. **p.** 6, 7. *Snowy.* Alps. Pyr.

✓ 19. **amplexicaulis.** L. L. ovato-lanceolate, acuminate, amplexicaul. Flower-stalks hairless. **p.** 6, 7. *High wet rocks.* Alps. Pyr.

✓ 20. **pyrenæus.** L. L. lanceolate, not amplexicaul. Flower-stalks cottony at top. Styles slender, hooked. **p.** 6, 7. *Very high moist.* Alps. Pyr.

β. bupleurifolius, Lap. L. lanceolate. Stem 1-flowered.

γ. plantagineus, Allioni. L. elliptico-lanceolate. Stem many-flowered.

21. **angustifolius.** DC L. lineari-lanceolate, not amplexicaul. Flower-stalks hairless. Styles straight, conical. **p.** 6, 7. *Very high.* Mt. Louis in Pyr.

✓ 22. **gramineus.** L. L. lineari-lanceolate, quite entire. Stem and flower-stalks hairless. Beak very short, recurved. **p.** 5, 6. *Warm sands.* m. and s. Fr. Vall. n. It. Sard.

C. *Nect. a fleshy scale. Carpels bordered. Fl. yellow.*

i. *L. undivided, R. fibrous.*

23. **lateriflorus.** Fl. sessile, axillary, or opposite L. Carpels grained, with a long beak. **a.** 3–5. *Marshes.* Cal. Sic.

✓ 24. **nodiflorus.** L. Flower sessile, opposite L. Carpels grained. Beak very short. **a.** 5, 6. *Wet.* Fontainebleau. Anjou.

✓ 25. **ophioglossifolius.** Vill Fl. stalked, in a terminal Pan. Carpels somewhat tubercled, with a short point. Lower L. cordate. Stem hollow. **a.** 5, 6. *Wet.* w. and s. F. It.

✓ 26. **Flammula.** L. Fl. stalked, in a terminal Pan. Carpels smooth, with a short point. Lower L. ovate or lanceolate. **p.** 6–9. *Wet.*

✓ *β. reptans.* L. narrow, lanceolate, quite entire. Stem creeping.

✓ 27. **Lingua.** L. Flower stalked, in a terminal Pan. Carpels smooth, with broad ensiform Beak. L. lanceolate, all nearly sessile, subserrate. **p.** 7. *Wet. Occ.*

28. **fontanus.** Flower-stalks solitary, opposite L. Carpels smooth. Beak very short. Stem hollow, creeping. Root L. cordate, all obtusely crenate. **p.** 6, 7. Aspramonte in Cal. Nebrodes.

ii. *L. entire, or slightly lobed. R. grumose.*

29. **bullatus.** L. L. all radical, obovate, dentate, somewhat nerved. Scape 1-flowered. **p.** 9, 10. *Dry hills.* Sic. Cors. Jap.

✓ 30. **Ficaria.** L. Lower L. subrotundo-cordate, repand; upper angular. Sep. usually 3. Pet. numerous. **p.** 4, 5. *Moist meadows and woods.*

[illegible]

✓ 31. **Thora.** L. No root L. Lower L. subrotundo-reniform, nearly sessile, crenate, upper incise. Stem 1–3-flowered. **p.** 5, 6. *High pastures.* Jura. Pyr. Alps. Sil. Apen.

32. **hybridus.** Biria Root L. solitary on long stalks, inciso-lobate at top. Floral L. lanceolate. Stem 1–3-flowered. **p.** 5, 6. *High calc. stony.* e. Alps. Abr.

iii. *L. divided. R. grumose. Stem scapelike, nearly naked.*

✓ 33. **flabellatus.** Desf Primary L. slightly lobed, broader upwards, others tripartite. Segments trifido-incise. Carpels beaked, in oblong heads. **p.** 4, 5. *Hill pastures.* Capri. Sic. var of 37 Gr v G

34. **spicatus** [illegible] All root L. peltato-cordate, with 3–5 approximate lobes. Floral L. 3-cleft. Segments linear, entire. Carpels in a cylindrical head. Beak recurved. **p.** 4, 5. Sic.

✓ 35. **monspeliacus** L. Outer root L. cordate, 3–5-lobed; inner ternate. Stem erect, few-flowered. Cal. reflexed. Carpels in an oblong head. Beak compressed, straight. **p.** 5, 6. *Rocky, open.* mdt. F.

✓ 36. **illyricus** L. Outer root L. cuneate, entire or three-cleft at top; inner ternate. Cal. reflexed. Carpel in an oblong head. Beak ensiform. **p.** 5, 6. *Rocky hills.* s. e. G. It. (var of 35. Gr v G).?

✓ 37. **chærophyllus.** L. Outer L. ternate. Segments once or twice tripartite. Neck of R. covered with fibres. Stem 1–5-flowered. Carpels somewhat rough, in an oblong head. Beak curved at top. **p.** 5, 6. *Dry.* s. and w. F. It. *Bertoloni says the primary L. are semicircular.*

38. **garganicus.** Root L. ternate and biternate. Neck of R. naked. Carpels smooth or finely grained, in an oblong head. Beak ensiform, curved at top. **p.** 5, 6. Mte. Gargano.

39. **millefoliatus.** Vahl L. bipinnate. Segments pinnatifid, outer less divided. Neck of R. naked. Cal. spreading. Carpels finely dotted, in an oblong head. Beak very short, revolute. **p.** 4, 5. *Dry pastures.* It.

40. **Agerii.** Primary L. reniform, three-lobed; next trifid, both coarsely crenate; latter L. ternate. Segments pinnatifid. Cal. at last reflexed. Carpels somewhat grained, in an ovate head. Beak straight. **p.** 4, 5. Bologna.

41. **palustris.** Sm Root L. broadly cordate, tripartite. Segments distant, 2 and 3-cleft, acutely inciso-serrate. Cal. spreading. Carpels smooth, in a globular head. Beak short, hooked. **p.** 5, 6. Cors. ✓

42. **Balbisii.** Root L. thick, broadly cordate, three-lobed, with coarse, blunt, unequal teeth. Cal. reflexed. Carpels smooth, in a globular head. Beak very short, recurved. **p.** 5–7. *Rills.* Mt. Gennargentu.

iv. *L. compound, or deeply divided. R. fibrous. Stem leafy.*

a. *Carpels without spines, tubercles, or wrinkles.*

* *Fr.-stalks not furrowed.*

43. **auricomus** L. Carpels velvety. Beak curved almost from the base. Sheaths from R. all, or nearly all, leaf-bearing. Root L. stalked, reniform, deeply three-cleft. **p.** 4, 5. *Shade.* ✓ [illegible]

44. **cassubicus** L. Carpels velvety. Sheaths from R. all, or nearly all, leafless. Root L. stalked, reniform, crenate. **p.** 3, 4. *Moist shade.* Sil. ✓

45. **montanus.** Wild Carpels smooth, (as in all the following species of this section.) Rec. hairy. Root L. palmate; segments obovate, trifid. Lower stem L. 5-part. Divisions oblongo-linear, palmato-divergent. **p.** 4. *High.* Alps. Pyr. ✓

46. **Villarsii.** DC Rec. hairy. Root L. palmate. Segments obovate, trifid, acutely dentate. Stem L. digitato-partite. Divisions linear, not divergent. **p.** 6. *Mountain pastures.* w. and s. Alps. Carn.

47. **acris.** L Rec. hairless. Beak of Fr. very short, somewhat curved. Lower L. palmato-partite. Segments somewhat rhomboid, acutely inciso-dentate; upper tripartite. Segments linear. Hairs of stem adpressed. **p.** 6, 7. *Meadows.*

β. *tuberosus.* Fil. hairy.

48. **velutinus.** Rec. hairless. Beak of Fr. very short, or wanting. Lower L. tripartite. Segments cuneiform, inciso-dentate. Hairs of stem spreading. **p.** 4–6. *Meadows.* It.

49. **lanuginosus.** L Rec. hairless. Beak of Fr. about half as long as carpel, hooked. Carpels not nerved. Root L. trifid. Segments broad, inciso-dentate. Hairs of stem reflexed. **p.** 5–7. *Woody hills.* m. and s. Eu. ✓

50. **bruttius.** Rec. hairless. Beak of Fr. about half as long as carpel, revolute. Carpels nerved. L. ternate. Lts. on nearly equal stalks, 2 and 3-partite. Segments lanceolate, acuminate, incise, irregularly serrate. Cal. spreading. **p.** 6. Cal.

** *Fr.-stalk furrowed. Rec. hairy.*

51. **polyanthemus.** L Beak merely hooked. Cal. spreading. Root L. 3–5-partite, inciso-multifid. Segments nearly linear. No runners. Hairs of stem spreading. **p.** 5–7. *Shady meadows and woods.* G. *rare.* n. F. ?

52. **nemorosus.** DC Beak curled round at the top. Cal. spreading. Root L. 3–5-partite. Segments obovate, trifid, dentate. Hairs of stem spreading. No runners. **p.** 5, 6. *Shady hills.* Fr. Sic. G. *I apprehend, from the description, that this is the* R. Thomasii *of Bert.* ✓

53. **repens.** L Carpels finely dotted. Cal. spreading. L. ternate, three-lobed, trifid, incise. Plant with Runners. **p.** 5–7. *Moist meadows, woods,* &c. ✓

54. **bulbosus.** L Cal. reflexed. Stem bulbous at base. Root L. ternate, tripartite, trifid, or incise. **p.** 5–7. *Meadows. The root, according to Bert., is sometimes tuberous.* ✓

55. **neapolitanus.** Ten Cal. reflexed. Stem somewhat bulbous at base. R. tuberous. Root L. trifid, acutely inciso-dentate. **p.** 4, 5. Apulia. Ischia. *Var. of* R. bulbosus, *according to Cosson.*

56. **heucherifolius.** Cal. reflexed. Stem bulbous at base. R. tuberous. Root L. rounded, cordate, inciso-lobate, acutely dentate. Carpels sometimes grained, and with short hairs. **p.** *Woods and moist pastures.* Pal. *The root L. appears to be peltato-cordate. Quære, if not rather belonging to Division* C. iii. ?

b. *Carpels in an oblong head, wrinkled.*

57. **sceleratus.** L Lower L. stalked, tripartite; segments obtusely crenate; upper trifid, inciso-dentate. Cal. reflexed. **a.** 6–9. *Wet.* ✓

c. *Carpels tubercled.*

58. **angulatus.** Style ensiform, *about a line long.* Root L. reniform, lobed, crenate; upper tripartite, inciso-serrate. Fruit-stalks furrowed. Cal. reflexed. **p.** 4, 5. Nebrodes.

59. **hirsutus.** Philonotis Ehrh Curt Beak very short. L. ternate, lobed, incise. Middle Lt. stalked. Cal. reflexed. Fruit-stalk furrowed. **a.** 7–9. *Meadows, fields, and waste.* ✓

β. *parvulus.* Very small.

60. **cordigerus.** Viv Beak very short. Root L. cordate, undivided, or three-lobed. Stem L. incise or simple. Stem nearly naked, 1–2-flowered. Mte. Coscione in Cors.

61. **trilobus.** Desf Beak very short. Root L. subrotund, others tripartite. Segments divergent, cuneate, toothed at top. Stem erect. Fl. solitary, terminal, or opposite L. **a.** 4. *Moist fields.* Perp. Toul. s. It. and Islands. *Rare.* ✓

d. *Carpels spinous.*

62. **arvensis.** L Stem erect. Fl. in Pan. Root L. tripartite. Stem L. multifid. Segments linear. *Spines of Carpels long and strong.* **a.** 6, 7. *Fields.* ✓

β. *tuberculatus.* Spines short and blunt.

γ. *inermis.* "Spines entirely wanting."—Bonn.

63. **subapetalus.** Stem erect. Fl. solitary, opposite L. Lower L. subrotund, lobed, upper 3–5-cleft. Pet. 2 or 3, small or wanting. Beak of Fr. somewhat hooked. *Hedges,* near junction of Arve and Rhone. var of 64 Gr&G ✓

64. **parviflorus.** L Stem procumbent. L. circular, 3-lobed, incise. Flower-stalks opposite L. Cal. at last reflexed. Tubercles of Carpels numerous, each ending in a fine prickle. **a.** 5, 6. *Dry banks.* s. and w. Eu. ✓

65. **muricatus.** L Stem procumbent. L. nearly circular, 3-lobed, coarsely toothed. Flower-stalks opposite L. Prickles of Carpels strong. Beak straight. **a.** 4, 5. *Cult. and waste.* s. Eu. ✓

Tribe IV. *HELLEBOREÆ.*

9. CALTHA. L

✓ 1. **palustris.** L Pet. deciduous. Stem erect. L. cordate, rounded, crenate. **p.** 3, 4. *Marshes.*

2. **radicans.** Forst Pet. deciduous. Stem creeping. L. cordato-triangular, serrato-crenate. **p.** 5, 6. *Sides of lakes and rivulets.* Sc.

10. TROLLIUS. L

✓ 1. **europæus.** L Pet. 15, converging in a globe. Nect. 5–10, like smaller Pet. **p.** 5, 6. *Cool hills.* n. and m. Eu.

11. ERANTHIS. Salisb

✓ 1. **hyemalis.** Sa Pet. 6–8, oblong. **p.** 2. *Base of mountains.* Fr. Ger. Sw. It. *occ.*

12. HELLEBORUS. L

✓ 1. **niger.** L Scape leafless, 1–2-flowered, with 2–3 oval bracts. Root L. pedate, *quite smooth.* **p.** 12–4. *Subalpine woods.* m. Eur.

2. **purpurascens.** Stem few-flowered, bearing entire or cloven, sessile floral L. Root L. digitate. Lts. cuneate at base, 3–5-lobed at top. Pet. subrotund. **p.** 2, 3. *Woods.* Apen. of Tusc.

β. Bocconi. Stem exceeding L.

✓ 3. **viridis.** L Stem few-flowered, leafless, except at the branches. Root L. digitate. Stem L. nearly sessile, palmate. Pet. ovato-subrotund. **p.** 3, 4. *Woods and thickets, occ.*

✓ 4. **odorus.** Waldst Stem few-flowered, naked, except at the branches. L. palmate, with prominent veins. Stigma horizontally recurved. **p.** 3, 4. *Mountain woods.* Salzb. Carn.

✓ 5. **dumetorum.** Wald Stem few-flowered, naked, except at the branchings. L. palmate. (Pedate, Koch, in 3, 4, 5.) Secondary veins immersed. **p.** 3, 4. *Thickets.* Trieste. Sty.

✓ 6. **fœtidus.** L Stem many-flowered, leafy. Lower L. pedate, smooth; upper trifid, on a dilated stalk. Bracts oval. **p.** 3, 4. *Calc. thickets.* n. Eur.

7. **lividus.** Ait Stem many-flowered, leafy. L. ternate, smooth, glaucous beneath. Lts. ovato-lanceolate. **p.** 1–3. Cors. Sard.

13. ISOPYRUM. L

✓ 1. **thalictroides.** L Caps. 1–3. Sep. 5. Pet. obtuse, lower stalks dilated at the base into membranous auricles. **p.** 4, 5. *Shade.* Pyr. Dauph. Sav. Austr. Boh. n. It.

14. GARIDELLA. Tourn

1. **Nigellastrum.** L Nectaries sessile, spreading. Sta. 10–12. **p.** *Vines and olives.* Prov.

15. NIGELLA. L

1. **arvensis.** L Anthers apiculate. Styles 5–7, spirally rolled back. Caps. smooth, united beyond the middle into an obconical fruit. Invol. 0. **a.** 7–2. *Fields.* m. and s. Eu. ✓
Hispanica.

2. **sativa.** L Anthers not apiculate. Caps. muricate, united to the top into an ovate Fr. Invol. 0. **a.** 6–8. *Fields.* Mtp. Erfurt.

3. **damascena.** L Anthers not apiculate. Caps. smooth, united to the top into a subglobose Fr. Fl. surrounded by a leafy Invol. **a.** 6–8. *Fields.* Coasts of Mdt. ✓

16. AQUILEGIA. L

1. **vulgaris** L Spur hooked. Caps. villous. Stem leafy, many-flowered. Styles not exceeding Sta. L. biternate, nearly smooth. **p.** 5, 6. *Shade.* ✓

β. Hænckiana. Koch L. more deeply divided. Upper Carth. Laybach.

γ. atrata. Koch Sta. porrect, much exceeding the very dark Fl. Sw. ✓

2. **viscosa.** Gouan Spur curved. Caps. villous. Stem nearly naked, few-flowered. Styles not exceeding Sta. L. biternate, viscoso-pubescent. **p.** *Open.* Mdt. Fr. var of 1 [illegible]

3. **alpina.** L Spur slightly incurved, half as long as the lamina. Stem leafy, 2–3-flowered. Lts. biternate. Segments linear. **p.** 7, 8. *High shade.* m. Alps. ✓

4. **pyrenaica.** DC Spur straight, nearly equalling the lamina. Stem nearly naked, 1–3-flowered. Lts. once or twice ternate. Segments linear. **p.** 7, 8. *High meadows.* Pyr. Italy. Sw. Pyr. Carn. Mountains of Carrara. ✓
Benthami

17. DELPHINIUM. L

A. *Pet. united; 1 inner Spur. L. divided into linear segments. Germen 1.*

1. **Consolida.** L Stem erect, with divaricate branches. Flower-stalks much exceeding floral L. Caps. smooth. **a.** 6, 7. *Fields.* m. and s. Eur. ✓

2. **paniculatum.** Host “Stem erect, branched, panicled. Rac. few-flowered. Stalks much longer than floral L. **a.** 6, 7. *Fields.* I. of Osero.”—Koch.

3. **pubescens.** D.C Branches divaricate. Fl. in a scattered Rac. Flower-stalks exceeding floral L. Caps. hairy. **a.** 6, 7. *Fields.* mdt. Fr. *More branched from base than* 1.

4. **Ajacis.** L Stem erect, nearly simple. Fl. in a long, dense Rac. Flower-stalks hardly so long as floral L. **a.** 6–8. *Fields.* It. *rare.*

B. *Pet.* 4, *separate; inner Spurs* 2, *outer longer than Fl. Germ.* 3–5.

i. *Pet. not bearded. L. multifid. Segments linear.*

5. **cardiopetalum.** D.C “Erect, somewhat branched. L. hairless, membranous, ternate. Divisions multifid. L. of the branches, and the lower floral L. multifid. Pet. hafted, blade circular, cordate at base. **a.** 7, 8. *Banks of the Garonne.*”—Duby. var of 9. Gr & G

6. **halteratum.** Sibt & Sm “Downy, stem erect. Branches spreading. L. tripartite. Lowest floral L. in many divisions; upper undivided. Upright rac. straight, spike-like. Flower-stalks short. Accessory Pet. cordato-orbicular, much shorter than the haft. **a.** 4–7. *Waste ground.* Rome. Naples. Sic.”—Bert. var of 9. Gr & G

7. **gracile.** D.C “Hairless. Stem with a few, somewhat spreading branches. L. tripartite, linear. Lowest floral L. somewhat trisect; upper undivided. Flower-stalks short. Accessory Pet. ovate, cuneate at base. **a.** 4, 5. *Sandy shores.* Sard.”—Bert. var of. 9. Gr & G

8. **longipes.** Moris Hairless. Stem with crowded branches. L. tripartite. Lower floral L. somewhat trisect; upper undivided. Flower-stalks long, straight. Accessory Pet. blunt, or emarginate. **a.** 4–6. *Sandy shores.* Sard.—Bert. var of 9. Gr & G

9. **peregrinum.** L Erect, branched. L. hairless; lower multifid; upper and floral L. linear, entire. **a.** 5, 6. *Waste ground.* Toulon. It.

ii. *Accessory Pet. bearded.*

10. **velutinum.** Downy. L. palmato-5-partite, multifid. Leaf-stalks dilated into a long sheath. Accessory Pet. with obtuse segments. Fr. tomentose. **p.** 6. *Woody hills.* It. *occ.*

11. **hybridum.** Wild Leaf ternato-multipartite. Divisions linear, their stalk dilated into a sheath at the base. Two linear bracts in the middle of the flower-stalk. **p.** 6, 7. *Stony woods.* Trieste, &c. [L. smooth; leaf-stalks very little dilated. Flower-stalks long; bracts and bracteoles very short.—Bert.]

12. **emarginatum.** L. 5–7-partite; segments inciso-dentate. Leaf-stalk dilated into a short sheath. Accessory Pet. with obtuse segments. Bracts linear, longer than flower stalk. Fr. hairless. **p.** 5, 6. Palermo.

13. **elatum.** L L. 5–7-lobed; segments incise. Leaf-stalk not sheathing. Sepals ovate. Segments of accessory Pet. obtuse. Two linear bracteoles near Fl. **p.** 5, 6. *Grassy.* Pyr. Alps of Prov. and Pdm. s. e. G. ✓

- α. *intermedium,* DC. Outline of L. cordato-subrotund. Fr. somewhat hairy.
- β. *palmatifidum,* DC. Outline of L. reniform.
- γ. *cuneatum,* DC. Segments of L. more cuneate than in the preceding.

14. **montanum.** D.C L. palmato-partite; segments cuneate at base, pinnatifido-laciniate above. Sep. lanceolate, acuminate. Accessory Pet. crenulate, acuminate. **p.** 7. Ven. Alps. *Bertoloni quotes to this D. elatum α of* Koch. var. of 13. Gr & G

C. *Pet.* 4, *Separate, beardless. Spur shorter than Fl.*

15. **Requieni.** DC “Spur nearly as long as Fl. Flower-stalk hairy, with a bract in the middle. I. of Hyères. Cors.”—Duby.

16. **pictum.** Wild Spurs somewhat shorter than Sep. Flower-stalk with a bract at the base, hardly longer than Fl. L. palmate. Segments oblongo-lanceolate, sometimes trifid. **a.** 4–6. *Pastures.* Sard. mdt. Fr. var of 15 ? Gr & G

17. **Staphysagria.** L Spur very short. Flower-stalk with three bracts at the base, twice as long as Fr. L. palmato-5-fid; segments entire or trifid. **a.** 6, 7. mdt. Fr. Istria. It.

18. ACONITUM. L

A. *Spur of Nect. slender, curled round. Helmet concave, cylindric. Fl. usually yellow.*

1. **Anthora.** L Spur with a rectangular bend. Cal. permanent. **p.** 8, 9. *High rocky thickets.* Alps. Jura. Pyr. ✓

- α. *Jacquini,* Rchb. Divisions of L. very narrow, linear, straight.
- β. *eulophum,* Rchb. Divisions of L. very narrow, linear, falcate.
- γ. *nemorosum,* M.B. Divisions of L. lineari-lanceolate.

✓ 2. **Lycoctonum.** L. Spur evenly curved. Cal. deciduous. L. palmate. **p.** 6, 7. *Mountain thickets.* m. and s. Eur.

- α. *vulparia*, Rchb. Spur spiral. Helmet somewhat enlarged at summit.
- ✓ β. *Thelyphonum*, Rchb. Spur spiral. Helmet conical.
- γ. *Myoctonum*, Rchb. Spur forming a ring. Helmet not much longer than wide.
- δ. *pallidum*, Rchb. Spur-hooked.
- ✓ ε. *pyrenæum*, DC. Segments of L. twice trifid, inciso-dentate.

B. *Spur of Nect. thick and blunt. Fl. blue, or rarely white.*

✓ 3. **Napellus.** L. Nect. bent horizontally. Fl. in Rac. Young carpels divaricate. Seeds obtusely wrinkled on the back. **p.** 6–8. *Moist woods and pastures.*

The supposed varieties of Napellus may be arranged as follows:—

* Spur with a head.
  † Fil. hairless.
    ‡ Flower-stalks erect, covered with curled hairs.
      Helmet gaping, hemispherical. α. *Napellus.*
      Helmet semicircular, closed.
    Flower-stalks long. β. *pyramidalis.*
    Flower-stalks shorter than Fl. γ. *bernhardianum.*
      Helmet deeper than a semicircle. δ. *multifidum.*
    ‡‡ Flower-stalks smooth.
      Helmet gaping. ε. *hoppeanum.*
      Helmet semicircular. ζ. *angustifolium.*
      Helmet deeper than semicircular. η. *acutum.*
  †† Fil. hairy.
    ‡ Flower-stalks erect, smooth.
      Helmet gaping. θ. *cæcum.*
      Helmet incumbent (Koch). ι. *amænum.*
    ‡‡ Flower-stalks covered with curled hairs.
      Helmet low, spreading in front. κ. *autumnale.*
      Helmet semicircular, label short. λ. *neubergense.*
      Helmet semicircular, label long. μ. *eminens.*
** Spur short, not curved or dilated at top.
  † Fil. smooth. ν. *koellanum.*
  †† Fil. hairy.
      Helmet beaked. ξ. *hians.*
    Helmet truncate.
  Flower-stalks nearly erect. Helmet open. ο. *strictum.*
  Flower-stalks somewhat spreading. Helmet deep. π. *lætum.*
  Flower-stalks with spreading hairs. ρ. *formosum.*
  Flower-stalks with curled hairs. σ. *tauricum.*

4. **paniculatum.** Lam. Nect. arched from the claw. Fl. at last in a divaricate Pan. Young Carpels divaricate. Back of seeds with winged wrinkles. **p.** 7, 8. *High moist.* Alps. ✓

- α. *cernuum*, Rchb. Pan. covered with short, spreading hairs. Helmet hemispherical.
- β. *molle*, Rchb. Helmet deep, with a short beak.
- γ. *hebegynum*, DC. Helmet narrow, with a longer beak.

5. **variegatum.** L. Nect. erect, or obliquely inclined. Rac. at last panicled. Young Carpels parallel. Back of seeds with winged wrinkles. **p.** 7, 8. *Mns.* Alps. e. G.

- α. *Cammarum*, Rchb. Helmet straight.
- β. *nasutum*, Fischer. Helmet inclined forwards. Beak deflexed.
- γ. *rostratum*, Bernh. Helmet curved forwards.
- δ. *variegatum*, Rchb. Helmet curved forwards. Beak bent upwards.

Störkianum Rch D.C Ur. o. s. 4 Crv G

6. **intermedium.** Nect. arched from the claw, inclined obliquely. Young Carpels incurved, connivent at top. Back of seeds with sharp wrinkles. **p.** 6–8. *Woody mns.* Alps of Berne and c. Alps.

Tribe V. *PÆONIACEÆ.*

19. ACTÆA L

1. **spicata.** L. Berry subglobose. Style 1. Pet. equalling Sta. Rac. ovate. L. 2–3-ternate. **p.** 5–6. *Calcareous thickets.* ✓

20. CIMICIFUGA L

1. **fœtida.** L. Germens on short stalks. L. ternately bipinnate. **p.** 7, 8. *Shade*, at Sloun, and the mountainous shores of the Weichsel near Grandenz in Moravia.

21. PÆONIA. L

1. **corallina.** Retz L. twice-ternate. Lts. ovate,

quite entire, hairless. Follicles 5, downy, recurved. Stigma short, crested. **p.** 5, 6. *Rocky.* w. Fr. (?) Salzb. Bassano. Tusc. Sic. Calab.

2. **officinalis.** Retz L. ternate. Leaflets unequally divided. Segments ovato-lanceolate. Follicles downy, nearly straight. **p.** 4–6. *Mountain woods.* Dauph. Pyr. It. Alps. Apenn.

3. **Russi.** Biv L. twice-ternate. Lts. broadly ovate, entire, downy beneath. Follicles hairy, recurved. Stigma long, linear. **p.** 4, 5. *Mountain thickets.* Cors. Sic.

4. **peregrina.** Mill L. twice-ternate. Lts. 2–3-partite. Segments laciniate and entire, whitish beneath. Follicles 2–3, tomentose, straight. **p.** 5, 6. *Shade.* s. e. of Alps. *rare.* Pollino and Gargano in K. Nap.

β. *paradoxa.* Lts. multipartite, obtuse. Follicles tomentose, straight. **p.** *Open hills.* s. Fr. *very rare.* Adr. G. Carn. Mte. Generoso. Thun.

II. BERBERIDEÆ. Vent

Anthers 4–6, opposite Pet. Germ. 1-celled. Seeds attached to the bottom.

22. BERBERIS. L

1. **vulgaris.** L Stem erect. Leaf simple, obovate, ciliato-serrate. Raceme many-flowered, stalked, pendulous. Spines tripartite, shorter than L. **S.** 5–6. *Hedges and thickets.*

2. **ætnensis.** Ram r Sch Stem decumbent. Leaf simple, obovate, serrato-spinulose. Rac. few-flowered, nearly sessile, pendulous. Spines thick, tripartite, exceeding L. **S.** 6, 7. *High.* Ætna. Nebrodes. Cors.

23. LEONTICE.

1. **Leontopetalum.** L. twice-ternate. Lts. oblong, obtuse, somewhat mucronate. Bracts leafy, many times shorter than the flower-stalk. **p.** *Fields;* said by Persoon to grow in Tuscany and Apulia, but it is not noticed by Savi, Tenore, or Bertoloni. ✓

24. EPIMEDIUM. L

1. **alpinum.** L No root L. Stem L. twice ternate. Leaflets cordato-lanceolate, acuminate, dentato-ciliate. **p.** 5. *Mountain thickets.* s. Tyr. n. It. Carniola. ✓

III. NYMPHÆACEÆ. D.C

Sepals passing into Petals and then into Stamens, all inserted on a fleshy mass, more or less surrounding the Ovaries. Fruit many-celled. Seeds attached to the spongy Dissepiments. *Aquatic plants with floating L.*

25. NYMPHÆA. L

1. **alba.** L Germen clothed to the top with the Fil. Rays of Stigma about 16. Sinus of L. with sides nearly straight. **p.** 7. *Still water.*

2. **biradiata.** Sommerauer Germen clothed with Fil. to the top. Stigma with a bloody central spot, running out into three teeth to each ray. Rays 5–10. Sinus of L. with curved sides, spreading outwardly. **p.** 7, 8. *Still water.* Triebener See in Styria. Zeller See in Salzb.

3. **candida.** Presl Only about one-third of Germen covered. Rays of Stigma 8. L. cordate. Sinus with curved sides, spreading outwardly. **p.** 8. *Stagnant.* Bohemia.

26. NUPHAR. Sm

1. **luteum.** Sm Stigma flat. Rays 16–20, not reaching to the entire margin. Anthers oblongo-linear. **p.** 6–8. *Still water.* ✓

2. **pumilum.** Sm Stigma at last hemispherical. Rays about 10, excurrent into a toothed margin. Anthers hardly half as long again as wide. **p.** 6, 7. *Still water.* Sc. Vosges. Salzb. Zur. Lower Sax. ?

3. **spennerianum.** Gaud Stigma at last hemispherical. Rays about 10, excurrent into a toothed margin. Anthers linear-oblong, four times width. **p.** 6–8. *Still water.* Feldsee in Black Forest. Vosges. var. of l. Gr G ?

IV. PAPAVERACEÆ. Juss

Sepals 2. Corolla regular, of 4 Pet. Placentas parietal. Seeds numerous.

27. PAPAVER. L

A. *Caps. bristly.*

1. **alpinum.** L Caps. obovate. Filaments subulate. Scape 1-flowered. Leaves nearly smooth, sub-bipinnate. Segments narrow, distant. *Fl. white, with yellow claw.* **p.** 7, 8. *High stony mountains. Rare.* Alps. ✓

2. **pyrenaicum.** Wild Caps. obovate. Filam. subulate. Scape 1-flowered. L. very hairy, pinnatifid; pinnæ broad, incise, contiguous. *Fl. yellow, or white with a yellow claw.* **p.** 7, 8. *High calc.* Pyr. Alps. Ap. vares! ✓

3. **hybridum.** L Caps. subglobose, furrowed. Fil. broader upwards. Stem leafy, many-flowered. L. bipinnatifid. **a.** 6, 7. *Fields.* ✓

4. **apulum.** Capsules ellipsoid. Fil. broadly clavate, hollow at top. Stem leafy, many-flowered. *Fl. orange, with a dark base, much larger than in* P. hybridum. **p.** 4, 5. *Fields.* Cal.

5. **Argemone.** L Caps. club-shaped, ribbed. Filaments broader upwards. Stem leafy, many-flowered. L. bipinnatifid. **a.** 6, 7. *Fields.* ✓

B. *Caps. smooth.*

6. **dubium.** L Capsules oblongo-clavate. Fil. subulate. Bristles of the many-flowered stem spreading, of the flower-stalks adpressed. L. bipinnatifid. **a.** 6, 7. *Fields.* ✓

β. *lævigatum,* M.B. Hairless.

γ. *Roubiæi,* DC. Caps. shorter.

7. **Rhæas.** L Caps. subglobose. Fil. subulate. Bristles of the many-flowered stem, and of flower-stalks spreading. L. pinnatifid, inciso-dentate, acute. **a.** 5–7. *Fields.* ✓

8. **somniferum.** L Capsules obovato-globose. Fil. enlarged upwards. Cal. smooth. Stem smooth. L. amplexicaul, glaucous, inciso-repand, somewhat obtuse. **a.** *Fields. Seed escapes by pores opening under stigma.* ✓

hortense Huss β. *officinalis.* Caps. larger, depressedly globose; pores closed. *Cult.*

✓ γ. *setigerum.* D.C. Caps. less spherical and smaller. Each tooth of L. ending in a bristle. **a.** 6. s. F. It.

28. MECONOPSIS. Vig

1. **cambrica.** Vig Caps. smooth, oblong. L. numerous, stalked, pinnate, incise. **p.** 6. *Mountain shade.* Wales. Cumberland. Pyr. Auvergne. *Not in G. or It.* ✓

29. GLAUCIUM. Tourn

1. **luteum.** Scop Stem smooth. Stem L. cordate, amplexicaul, sinuato-pinnatifid. Pod roughish with minute tubercles. **b.** 6, 7. *Sand or gravel of sea-shore, and sometimes of lakes and rivers.* ✓

2. **fulvum.** "Stem smooth. Stem L. rotundato-sinuate. Pod rough, 2-valved. Fl. nearly sessile. **b. p.** *Gravel and sand.* s. Europe."—DC.; *but I find it in no local Flora.*

3. **corniculatum.** Curtis Stem hairy. Stem L. pinnatifid, incise. Pod 2-valved, bristly. **a.** 7. m. Fr. *rare.* e. G. Palat. ✓

4. **hybridum.** Lois Pod 3–4-valved, with strong bristles at top. Placentas distinct. *Fl. violet.* **a.** 6. *Calcareous fields.* e. Eng. mdt. Fr. *rare.* ✓

30. CHELIDONIUM. L

1. **majus.** L Flowers umbellate. L. pinnate. Lts. subrotund, dentato-lobate. Pet. elliptic, entire. **p.** 5, 6. *Hedges,* &c. ✓

β. *laciniatum.* Lts. laciniate.

31. HYPECOUM. L

Pod jointed in all.

1. **procumbens.** L "Pods compressed, curved. Outer Pet. largest, exactly 3-lobed; inner trifid, the middle division dentato-ciliate, conduplicate. Pinnules of L. lineari-lanceolate."—Bert. **a.** 3, 4. *Fields.* Coast of Mdt. *Not in G.* ✓

2. **glaucescens.** Guss Pods compressed, curved. Outer Pet. largest, obscurely 3-lobed; inner tripartite, the middle division nearly flat. 3, 4. *Sandy shores.* Cors. s. It. vares!

3. **pendulum.** L Pods terete, pendulous. Outer Pet. entire; inner trifid; the middle division subrotund, stalked. **a.** 6, 7. *Sandy fields.* mdt. Fr. Palat. ✓

grandiflorum ✓

V. FUMARIACEÆ. D.C

Sepals 2. Petals 4, dissimilar. One or both of the outer saccate at base. Stamens 6, in 2 sets. Lateral Anther of each set 1-celled.

32. CORYDALIS. D.C

A. *Root tuberous. Stem nearly simple, bearing a few alternate, twice ternate, divided L.*

Schweigg

1. **cava.** Stem without scales. Bracts ovate, entire. Rac. of Fr. erect. Stalks as long as Caps. R. hollow, everywhere producing fibres. **p.** 4, 5. *Shade.* Fr. Germ. Sw. n. It.

2. **fabacea.** Pers Stem with a scale below L. Bracts ovate, entire. Rac. of Fr. crowded, nodding. R. solid, fibrous at the bottom. **p.** 4, 5. *Shade.*—Malesherbes. s. e. G.

3. **solida.** Sm Stem quite simple, with a scale below L. Bracts digitato-partite. Rac. of Fr. long, erect. R. solid, fibrous at bottom. **p.** 4, 5. *Moist shade.* Fr. G. Sw. n. It.

4. **densiflora.** "Stem with a scale below L. Rac. terminal, somewhat crowded. Bracts semicircular and obovate on a cuneate base, multifid, toothed. **p.** 4, 5. *Mountains.* Madonie. Cammarata in Sic."—Guss.

5. **pumila.** Host Stem with a scale below L. Bracts digitato-partite. Rac. of Fr. crowded, nodding. Root solid, fibrous at base. **p.** 4. *Shade.* Aus. Boh. Sty. v of. 2. Cr. G

6. **lutea.** D.C L. ternato-tripinnate. Stalks flat, without a margin. Seeds shining. Caruncle spreading, denticulate. **p.** 5–7. *Rocks.* s. Tyr. Tessino. Treves. Narb. It.

7. **ochroleuca.** Koch L. ternato-tripinnate. Stalks with a raised margin. Fr.-stalks shorter than pod. Seeds rather dull. Caruncle adpressed, nearly entire. **p.** 7–9. *Rocks and stony.* Trieste. Istria.

8. **acaulis.** Pers Stem hardly any. L. ternato-pinnate or bipinnate. Stalks flat. Fruit-stalks 2–4-times as long as pods. Seeds rather dull. Caruncle adpressed, nearly entire. **p.** 5–7. *Rocks and walls.*—Pola.

[illegible]

9. **claviculata.** Pers Stem climbing. L. bipinnate. Stalks ending in branched tendrils. Lts. ovate, entire. Bracts longer than flower-stalk. Style deciduous. **a.** 6, 7. *Stony thickets.*

33. SARCOCAPNOS. DC

1. **enneaphylla.** D.C L. triternate. Lts. stalked, ovato-orbicular. **p.** *Rocks.* Roussillon. ✓

34. FUMARIA. L

A. *Fr. oval, nearly flat, small.*

1. **spicata.** Rac. spike-like. Stem erect. **a.** 4, 5. *Fields.* s. Fr. Pdm. Salerno Sic. ✓

B. *Fr. nearly spherical.*

2. **capreolata.** L Fruit very obtuse, nearly smooth. Sepals ovate, dentate, with short acumen, as broad as Cor. and half as long. Fruit-stalks spreading, or recurved. **a.** 6–9. *Hedges and cult.* non-apicul ✓

3. **muralis.** Sond "Fruit subrotund, ovate, obtuse, smooth. Sep. ovate, acuminate, dentate, half as long as Cor. Rac. evolute, lax. Fruit-stalks spreading. Divisions of L. lanceolate, or oblongo-lanceolate. **a.** 6–8. *Walls. Hamburg.*"—Koch. apiculate

4. **agraria.** Lag Fruit subrotund, obtuse, somewhat margined at base, uneven. Sep. ovato-oblong, acuminate, dentate, not half as long as Cor. Rac. lax. Bracts shorter than pedicel of Fr. Divisions of L. oblong, or obovate. **a.** 5, 6. *Walls and thickets, occ. Stem stronger than in* F. capreolata. *Fl. about the same size.* F media D.C

5. **officinalis.** L Fr. sub-globose, wider than long, uneven. Sepals ovato-lanceolate, acute, dentate, narrower and shorter than corolla, broader than fruit-stalk. **a.** 5–9. *Cult.* ✓

6. **Wirtgeni.** Koch "Fr. subglobose, obtuse, with a short apiculus, uneven. Sep. ovato-lanceolate, acuminato-cuspidate, dentate, not half as long as Cor., broader than fruit-stalk. Bracts shorter than fruit-stalk. Divisions of L. lanceolate. **a.** 5–9. *Fields.* Coblenz."—Koch.

densiflora DC

7. **micrantha.** Lag Fr. subglobose, obtuse, uneven. Sepals subrotund, dentate, with short acumen, broader than and nearly half as long as corolla. Bracts as long or longer than fruit-stalk. Div. of L. linear. **a.** 6–9. *Cult. occ.* ✓

✓ 8. **Vaillantii.** Lois Fr. globose, obtuse, uneven. Sepals narrower than the fruit-stalk, and many times shorter than the Fl. Rac. lax. Divisions of L. nearly linear, (flat, Parl.) **a.** 6–9. *Fields, mostly in a calc. soil.*

9. **parviflora.** Lam Fr. ovato-subglobose, somewhat acute. Sep. ovato-incise, as broad as corolla, but only about one-sixth of its length. Rac. of Fr. lax. Div. of L. linear, (channeled, Parl.) **a.** 6–9. *Fields, chiefly in a sandy soil, occ.* ✓

VI. CRUCIFERÆ. Juss

Sepals 4. Petals 2. Anthers 6, in two pairs and two single ones. In *Lepidium ruderale* there are no petals and only two anthers; and in one or two other species the number of parts is occasionally incomplete.

For the Tribes, see the Linnæan Class Tetradynamia. *They are, with very few exceptions, herbaceous plants and with alternate L.*

SILICULOUS.

Tribe I. *THLASPIDEÆ.*

35. BISCUTELLA L

A. *Two Sep. spurred at the base. Silicle rough with elevated points.*

✓ 1. **auriculata** L Annual. Spurs obtuse. Silicle tapering gradually into the style. **a.** 5, 6. *Fields.* s. Fr. Pdm. Como.

✓ 2. **hispida.** D.C. Annual. Spurs acute. Style beginning abruptly. Stam. hispid. **a.** 6, 7. *Open hills.* Upper Prov. Pdm. Isle of Veglia.

✓ 3. **cichoriifolia.** Lois. Perennial. Spurs somewhat acute. Style beginning abruptly. Stam. villous. *Lower L. runcinate.* **p.** 6–8. Bagnères de Luchon.

B. *Sep. equal at the base. Annual.*

4. **lyrata.** Root L. lyrate. Stem erect, naked. **a.** 1–4. *Dry hills.* Capri. Calab. Sic.

α. . Silicle piloso-hispid.

β. *maritima,* DC. Silicle smooth, pubescent on the margin. Capri. Apulia.

γ. *raphanifolia,* Willd. &c. Silicles quite smooth. Sic.

apula L.

✓ 5. **didyma.** Silicle ciliato-glandulose; no margin. Root L. obovato-lanceolate, acute, dentate. Stem L. narrower. Stem hispid at base. **a.** 4, 5. *Dry fields.* Apulia. Cal.

β. *columnæ,* Ten. Stem nearly naked. Disc of silicle rough.

γ. *apula,* DC. Silicle very small, the disc rough.

lævigata L

C. *Sep. equal at the base. Perennial.*

6. **saxatilis.** Schlei L. mostly from the R., oblong, rough. Silicle hairless. **p.** 5–8. *Rocky hills.* s. Eur. G. *Not in Sic.* ✓

α. *longifolia,* Vill. Silicle rough with elevated points. L. entire. ✓

β. *mollis,* Lois. Silicle rough with elevated points. L. more or less incise. ✓

γ. *ambigua,* DC. Silicle smooth. L. hispid. Root L. sinuato-dentate, attenuate at base. Stem L. somewhat cordate, semi-amplexicaul. ✓

δ. *lævigata,* DC. Silicle smooth. L. hispid, oblong, attenuate. Stem L. linear, quite entire. ✓

ε. *lucida,* DC. Silicle smooth. L. smooth, oblong. ✓

7. **coronopifolia.** Vill Silicle smooth. L. hispid, mostly from R., pinnatifid; lobes remote, divaricate, three on each side. **p.** 5–7. Prov. Pdm. var of 6 Gr & G

36. IBERIS.

A. *Fruit in a Corymb, or very short Rac.*

i. *Plant woody at base.*

1. **integerrima.** "Stem branched, ascending, with glandular hairs in the upper part. L. fleshy, obovate, obtuse, entire (or with a single tooth). Silicle ovate. Lobes acute. **w.** 5, 6. *Stony hills.* Sard."—Bert.

2. **tenoreana.** "Stem pubescent. L. obversely lanceolate, spatulate, dentate at top. Silicle subrotundo-ovate. Lobes shorter than the style. Seeds semi-ovate. *Smooth, unless under a strong glass.* **w.** c. Apen."—Bert.

3. **Pruiti.** "Decumbent L. obovato-spatulate; upper obversely lanceolate; all toothed at top. Silicle broadly ovate, half round. *Larger and more evidently rough than in* I. tenoreana. **w.** 5, 6. Madonie."—Bert.

ii. *Plant annual, or biennial.*

4. **spatulata.** Berg Smooth. L. spatulate, entire, somewhat fleshy. Sinus of the silicle narrow, acute. **a.** *Very high, slaty, or calcareous rocks.* Pyr.

aurosica Vill

5. **nana.** All Smooth. L. subrotundo-spatulate, entire, somewhat fleshy. Sinus of the silicle broad, obtuse. **a. b.** 6. *High, calcareous, stony.* Prov. Dau. Pdm.

6. **ciliata.** All Nearly smooth. L. linear, entire, ciliate at base. Lobes of the silicle obtuse, as long as style. **a. b.** 6. *Rocky fields.* Prov. Nice.

7. **linifolia.** L Smooth. L. linear, entire. Root L. somewhat dentate. Silicle with two teeth. **a.** 6. *Great part of the year; calcareous, stony.* Nice. Grasse. Lig.

8. **umbellata.** Smooth. L. lanceolate, acuminate; lower somewhat toothed; upper quite entire. Silicle deeply and very acutely 2-lobed, umbellate. **a.** 6, 7. It.

B. *Fr. in a lengthened Rac.*

i. *Annual, or biennial.*

9. **pinnata.** Gouan Smooth. L. pinnatifid. Fl. in a corymb; not much elongated afterward. Lobes of silicle divaricate, acute. **a.** 5, 6. *Cult.* s. Fr. Lig.

10. **intermedia.** Guers Smooth. L. lanceolate, obtuse. Root L. somewhat denticulate, others quite entire. Silicle rough, truncate, or broadly emarginate. Lobes acuminate. **a. b.** 6, 7. *Rocks* between Rouen and Duclair. Lorraine. Champagne. Boppart.

β. *Prostii*, Soy. Will. Lobes of silicle forming a right angle. Lorr. Ap. Gr. G.

γ. *Durandii*, Boreau. Silicle oval. Lobes acute, somewhat divergent.

δ. *Violeti*, Soy Godron. Silicle ovate. Lobes short. *According to Godron the silicle of* I. intermedia *is at least as large at top as in the middle.* Ap.

11. **amara.** L L. lanceolate, acute, with 2 or 3 teeth on each side. Sinus of silicle narrow. **a.** 6, 7. *Calcareous fields. Somewhat shrubby.*

[illegible] All

12. **garrexiana.** L. oblong, attenuate at base, obtuse, quite entire, hairless. **w.** 6, 7. *Stony.* Pyr. Pdm. Mts. of Carrara.

13. **saxatilis.** L L. linear, acute, or mucronate, quite entire, somewhat fleshy, hairless, or ciliate. Lobes of silicle obtuse. **w.** 6. Pdm. Umbria. Abr. Jura. ✓

14. **semperflorens.** L. cuneate, or spatulate, quite entire. Silicle truncate, emarginate. S. bordered. **w.** 12. 3. *Fissures of rocks.* Sic. ✓

I. pyrenaica of Lap. is not well known. is 43. 1. page 17.

37. TEESDALIA. Br

1. **nudicaulis.** Br Outer Pet. largest. Leaves somewhat lyrate. **a.** 4, 5. *Sandy or gravelly.* ✓

2. **regularis.** Petals all equal. L. not at all lyrate. *The divisions narrower than in the preceding, and more distant.* **a.** 3, 4. *Sandy or gravelly.* s. Europe, *rare.* Torre de' Schiavi, near Rome. ✓

38. THLASPI. L

A. *Seeds not smooth.*

1. **arvense.** L Valves of silicle winged for their whole length. S. many. L. smooth, oblong, dentate. Silicle nearly circular, shorter than stalk. Seeds with arched wrinkles. **a.** 6, 7. *Fields.* ✓

2. **alliaceum.** L L. oblong, obtuse, somewhat toothed; lower stalked; upper sagittate, amplexicaul. Silicle somewhat ovate, ventricose. Stigma nearly sessile. Seeds pitted. **a.** 3, 4. *Fields.* m. and s. Eur. ✓

B. *Seeds smooth. Fruit in a lengthened Raceme.*

3. **perfoliatum.** L L. somewhat toothed. Root L. stalked. Stem L. cordato-amplexicaul. Stem branched. Pet. equalling calyx, *white.* Silicle obcordate, 8-seeded. Stigma nearly sessile. **a.** 3. 5. *Fields.* ✓

4. **montanum.** L L. entire. Root L. obovate, stalked. Stem L. oblong, sagittate, amplexicaul. Pet. larger than calyx. Silicle obcordate, 4-seeded. Style filiform. **p.** 3, 4. *Hills. Not in Eng. or Sic.* ✓

5. **alpestre.** L L. entire. Root L. ovate, stalked. Stem L. oblong, amplexicaul. Pet. equalling calyx. Silicle obcordate, 6–12-seeded. Style filiform. **p.** 6, 7. *High mts. and fields.* Alps. Pyr. n. Eng. *The stem L. are described as arrow-shaped by Smith and Gaudin.* ✓

T. alpestre of LINN. is a doubtful plant. Jordan, "Ann. de la Soc. Linn. de Lyon," proposes to replace it by a new species; but I am by no means satisfied as to the constancy of his distinctions.

6. **rivale.** L. entire. Root L. subrotund, oblong, stalked. Stem L. subsagittate, amplexicaul. Silicle cuneato-elliptic, 4–8-seeded. Stigma nearly sessile. **a.** 5, 6. *Sand and gravel. High.* Sic. Gennargentu.

7. **præcox.** Wulf Stems many. Shoots short. Stem L. oblongo-cordate. Silicle obcordate, the wings in the upper part as wide as the cell. Style passing beyond the terminal notch. **S.** 8–10. **p.** 4, 5. Friuli.

✓ 8. **alpinum.** Jack Stems many. Shoots like runners. Stem L. cordate. Silicle oblongo-obcordate. Wings not more than half as wide as cell. **S.** 8–16. **p.** 4, 5. *Mountain pastures.* e. Alps.

C. *Seeds smooth. Fruit in a Corymb. Fl. lilac.*

9. **cepæifolium.** Koch Stems many. Upper L. sessile, without auricles. Silicle oblongo-obovate, with a narrow wing. **S.** 8–12. **p.** 5. *Snowy.* Alps.

✓ 10. **rotundifolium.** Gaud Stems many. Upper L. auriculato-amplexicaul. Silicle oblongo-obovate, with a narrow wing. **S.** 6. **p.** 7, 8. *Very high, calcareous, stony.* Alps.

Not well known.

11. **Schrankii.** L. hispid, entire. Root L. stalked. Stem L. amplexicaul. Cal. shorter than Pet. Silicle obcordate. *Walls.* Austria. *Not in Koch.*

Tribe II. *LEPIDINEÆ.*

39. HUTCHINSIA. Br

A. *L. pinnate.*

✓ 1. **alpina.** Br Stem simple, naked. Fruit in a lengthened Rac. Pet. twice as long as deciduous calyx. Silicle acute at each end. Style short. **p.** When the snow melts. *High.* Pyr. Alps. Apen.

✓ 2. **brevicaulis.** Hoppe Stem simple, naked. Fruit in a dense corymb. Pet. twice as long as deciduous Cal. Silicle obovate, stigma sessile. **p.** 7, 8. *Wet, stony, high, granitic mountains.* e. Alps.

✓ 3. **petræa.** Br Stem branched, leafy. Fr. in a long Rac. Pet. hardly exceeding Cal. Silicle obtuse at each end. Stigma sessile. Cotyledons accumbent! **a.** 3–6. *Rocks and walls.*

B. *L. undivided. Style filiform.*

4. **stylosa.** Dwarf. L. somewhat fleshy; lowermost obovate, in rosettes; upper oblong, sessile. Stalk shorter than silicle. Style long. **w.** 5, 6. *Mountains.* It.

5. **brevistyla.** L. somewhat fleshy, subserrate; the lowest obovate, stalked; others somewhat sagittate, sessile, acute. Silicle emarginate. Style very short. Seeds 4–8. **p.** 4, 5. Sard. Cors.

40. CAPSELLA. Vent

1. **Bursa Pastoris.** Mœnch DC Root L. pinnatifid. Rac. long. Silicle triangulari-obcordate. **a.** 3–11. *Everywhere.* ✓

2. **pauciflora.** Koch Stem much branched. Lower L. trifid; others lanceolate, entire. Rac. somewhat umbellate. Fl. 3–4, on long stalks. Stigma nearly sessile. Silicle subrotundo-truncate. **a.** 6, 7. s. Tyr. ✓

3. **procumbens.** Fries L. sinuato-pinnatifid, sometimes nearly entire. Silicle obtuse at each end. Stigma sessile. Seeds 10–12. **a.** 3, 4. *Sea-shore.* Pisa. s. Fr. Fribourg. ✓

41. LEPIDIUM. L

A. *Valves somewhat turgid, not winged. Style exsert.*

1. **Draba.** L Silicle cordate, turgid, entire, crowned with filiform style. L. amplexicaul, lanceolate, toothed. **a.** 6, 7. *Fields.* m. and s. Eu. ✓

B. *Silicle winged, emarginate.*

2. **sativum.** L Cotyledons tripartite. Silicle circular. L. variously divided and incise. **a.** 4, 5. *Escapes.* ✓

3. **campestre.** Br Silicle ovate, with scaly dots. Style not exceeding lobes. L. undivided. Stem L. sagittate, toothed. **a.** 6, 7. *Fields.* ✓

4. **Smithii.** Hook Silicle ovate, nearly smooth. Style twice as long as lobes. L. undivided. Stem L. sagittate, toothed. **p.** 6, 7. Br. ✓

5. **hirtum.** DC Villars Silicle oblong, hairy. Style somewhat exceeding lobes. Stem ascending, branched at base. Stem L. sagittate, toothed, villous. **b.** 6–8. *Fields.* s. Eu. ✓

Benth

6. **heterophyllum.** Silicle elliptic, hardly emarginate, smooth. Style filiform, exsert. Root L. entire and toothed, or lyrate. Stem L. erect, cordato-sagittate. **p.** Vallée d'Eynes. Pyr.—Benth.

7. **humifusum.** Req Silicle ovate, hairless. Root L. lyrate and ovate. Stem L. sagittate, entire. Stems prostrate, pubescent. Flower-stalks pubescent. **p.** 4, 5. *Mns.* Corsica.

8. **bonannianum.** Silicle winged at the top. Style exsert. Fruit-stalks spreading, or deflexed. Root L. lyrate and obovate. Stem L. semi-amplexicaul, with small rounded ears. Stem ascending. **a.** and **p.** 5–7. *Open hill pastures.* Madonie, &c. Sicily.

C. *Silicle emarginate. Valves keeled and with a narrow wing at the top only. Style very short. Fl. very small. Number of parts often incomplete.*

9. **ruderale.** L Silicle ovate, spreading, shorter than pedicel. Fl. diandrous, apetalous. L. smooth; lower pinnatifid; upper linear, entire. **a.** 5–7. *Uncult.*

[illegible]

10. **perfoliatum.** L Silicle elliptic. Lower L. stalked, pinnate, multifid; uppermost cordate, amplexicaul, entire. **a.** 5, 6. *Fields.* Lower Aus.

D. *Silicle entire. Valves keeled, wingless. Style very short.*

11. **latifolium.** L Silicle ovate, apiculate. L. ovato-lanceolate, undivided, somewhat serrate; the lower on long stalks. **p.** 7. *Moist.*

12. **graminifolium.** L Silicle ovate, apiculate. Root L. incise, or pinnate; stem L. linear, entire. Stem branched. **p.** 6–10. *Uncult.* m. and s. Eur.

42. BIVONEA.

1. **lutea.** Pouch 2–6-seeded. Stigma nearly sessile. Lower L. stalked; upper cordate, amplexicaul. **a.** 2–3. *Dry hills.* Sic.

43. ÆTHIONEMA. Br

1. **saxatile.** Br Pouch obcordate, many-seeded. Style very short. Larger stamen toothed. Rac. of fruit long. **p. a.** 3, 4. *Dry calc.* s. Eur.

2. **thomasianum.** "L. somewhat fleshy, elliptic, obtuse. Rac. of Fr. condensed. Silicle orbicular, cordate at base. Seed 1, smooth. **a.** 7. Val di Cogne above Aoste."—Bert.

44. SUBULARIA. L

1. **aquatica.** L L. subulate. **a.** 7. *Bottom of lakes.* Britt. Vosges. Holsace. ✓

45. SENEBIERA. Pers

(didyma Pers)

1. **pinnatifida.** DC Silicle didymous. L. pinnatifid. Lts. somewhat incise. Style very short. **a.** 7. *Seaports, uncult.* ✓

2. **Coronopus.** Poiret Silicle undivided, crested with little sharp points. Style prominent. L. pinnatifid, subdivided. *Spreads flat on the ground.* **a.** 6–9. *Uncult.* ✓

Tribe III. *ALYSSINEÆ.*

46. COCHLEARIA. L

A. *Longer Fil. geniculate! Silicle generally somewhat 4-edged at the base. Stigma 2-lobed.*

Kernera Medik saxatilis

1. **saxatilis.** L Silicle lentiform, smooth. Root L. oblong, dentate, hairy. Stem L. linear-oblong. **p.** 6–8. *Rocks and stony.* s. Europe. *Seems ill placed in this genus.* ✓

β. *auriculata.* Stem L. auricled at the base. *Calc. rocks, high.* Auvergne. Savoy. Pyr.

"L. of both sorts are sometimes found on the same plant. Incumbent and accumbent cotyledons are found in different seeds in the same cell."—Koch.

B. *Fil. not geniculate.*

* *Valves of Silicle nerveless.*

2. **brevicaulis.** Seeds minutely tubercled. Corymb bracteate. L. oblong, attenuate, nearly entire; lower crowded. **p.** (**w.** Bert.) 7, 8. *Stony.* s. Tyr. *very rare.*

Armoracia rusticana F

3. **armoracia.** L Seed smooth. Root L. oblong, crenate. Lower stem L. lanceolate, pectinato-pinnatifid. R. large and fleshy. **p.** 5. *Moist clay. Escapes.* ✓

** *Valves of Silicle with a prominent nerve. Seeds finely tubercled.*

4. **glastifolia.** L Silicle nearly globose. Stem L. cordato-sagittate, amplexicaul, acuminate, quite entire. **a. b.** 5–7. *Fields.* Sisteron in Dau. Cors. ✓

5. **anglica.** L Silicle ellipsoid, strongly reticulate. Root L. ovate, entire. Stem L. mostly sessile, oblong; uppermost amplexicaul. **a.** 5, 6. *Muddy shores.* Eng. Britt. n. Germ. ✓

✓ 6. **officinalis.** L Silicle globose, hardly veined. Root L. subrotundo-cordate. Stem L. rhombo-ovate, dentato-angular; uppermost amplexicaul. **a.** 5, 6. *Sea-shore and mns.* m. and n. Eur.

β. *grœnlandica.* Silicle as long as stalk. L. cordate; upper pentagonal.

✓ 7. **pyrenaica.** D.C Silicle obovato-globose, as long as stalk. Root L. cordato-reniform, entire. Stem L. few, dentate; uppermost sessile. "*Differs from Sp.* 6 *chiefly in having almost all the L. reniform.*"—Koch. **b.** 6. *Very high.* Pyr. Marienzell, Sty. var of 6 Gr.G

✓ 8. **danica.** L Silicle as long as stalk. Nearly all the L. stalked. Root L. cordate. Stem L. with 3–5 angles; uppermost ovato-hastate. **a.** 5, 6. *Sea-coast.* n. Eur.

47. VESICARIA. Lam

✓ 1. **utriculata.** Lam Calyx with two sacks. L. oblong, quite entire, smooth; lowermost ciliate, somewhat spatulate. **sS.** 3–5. *Calc. rocks.* Burg. Dauph. Berne. Vall. Pdm.

2. **sinuata.** Poiret Sepals alike, spreading. L. velvety, oblong, entire, or sinuato-dentate. Stem herbaceous. **p.** 5, 6. Mte. Gargano. Fiume. *Not in Bertoloni.*

48. FARSETIA. Br

✓ 1. **clypeata.** Br Herbaceous, erect. L. oblong, repand. Silicle flat, velvety. Stigma capitate. **b.** 4. *Stony hills.* Mtp. Nice. Verona. Abruzzi. Sic.

49. AUBRIETIA.

✓ 1. **deltoidea.** L. obovato-cuneate, nearly entire. Flower-stalk longer than calyx. Style oblique. **p.** 4, 5. *Rocky hills.* Abruzzi. Mte. Gargano. Nebrodes.

2. **Columnæ.** "L. obovato-lanceolate, entire, fringed with long, simple or forked hairs. Silicle crowned with a straight style as long or longer than itself. **p.** 5, 6. Majella. Morone."—Bert.

50. BERTEROA. D.C

Alyssum. inc. L

✓ 1. **incana.** D.C Silicle downy at first, somewhat ventricose. **p.** 5–10. *Uncult.* Vosges, *rare.* Prov. Ger. Rhine. Pdm.

2. **obliqua.** Silicle downy, elliptic, flat. **p.** 6, 7. *Uncult.* s. It.

51. ALYSSUM.

A. *Shorter Stamens with an obtuse tooth-like callus at base. Flower yellow. Silicle smooth. Seeds margined.*

✓ 1. **saxatile.** L Stem shrubby at base. Silicle obovato-orbicular, swelling in the middle. Seeds 4. L. oblong, attenuate, entire, hoary, with soft down. **p.** 4–7. *Open hills.* Sil. Franconia.

✓ 2. **orientale.** Stem shrubby at base, erect. Silicle oblately-suborbicular, slightly emarginate. Rac. compound, panicled. Lower L. obovato-lanceolate, repand, or laciniate. **w.** 3, 4. *Rocks.* Luc. Cal.

3. **medium.** Somewhat shrubby. Fr. in a lengthened Rac. Silicle ovato-orbicular, swelling in the middle. Seeds 8. L. of shoots oblong, attenuate, softly downy. **p.** 5, 6. *Calc. hills.* Carinthia. Carniola.

4. **gemonense.** Stem shrubby at base. Fr. in a lengthened Rac. Silicle nearly circular, swelling in the middle. Seeds 4. L. lanceolate, nearly entire, hoary, velvety. **p.** *Walls.* Sty. Carinthia.

B. *Shorter Stamens with a wing-like appendage at base. Flower yellow.*

i. *Seeds 2, their stalks free.*

5. **argenteum.** Vit Stem hoary, with stellate hairs. Rac. corymbose. Silicle ovato-orbicular, hairy, with broad border. L. oblongo-patulate, silvery. **p.** *Open rocks.* Pdm. Verviers.

✓ 6. **corsicum.** Dub Stem somewhat shrubby at base, hairless, very branched. Lower L. ovato-spatulate, silvery on both sides. Silicle circular, smooth, and shining. Seeds hardly bordered. **p.** 5, 6. Bastia.

✓ 7. **alpestre.** L Stem somewhat shrubby at base, diffuse, hoary. Rac. simple, corymbose. Silicle obovato-oblong, swelling in the middle. Seeds with a narrow border on one side. L. obovate, hoary. **p.** 7, 8. *High exposed rocks.* Nicolaithal. Vall. *rare.*

8. **nebrodense.** "Hoary, with stellate hairs. Silicle elliptic and obovate. Valves flat, longer than the slender styles. Stam. toothed. Pet. entire. Rac. corymbose. Root L. in rosettes; these and lower L. subrotundo-cuneate; upper obovato-spatulate. Stems somewhat shrubby, diffuse, and ascending. **w.** 5, 6. *High stony pastures.* Madonie. *Differs from* A. alpestre *by its compound Rac., the shape of its silicles, and in having L. hoary on both sides.*"—Guss.

ii. *Seeds* 4. *Stalk attached at base to the Dissepiment.*

9. **cuneifolium.** Ten " Densely covered with adpressed, stellate hairs. Stems diffuse, somewhat herbaceous. L. obovato-cuneate. Fr. in a corymb. Silicle ovate, somewhat emarginate, about equal to style. **p.** 7. *High.* Umbria and Abruzzi."—Ten.

10. **montanum.** L Stem diffuse, downy. Rac. simple. Longer Fil. winged. Silicle circular, swelling in the middle, somewhat emarginate, hoary with adpressed stellate pubescence. L. hoary; lower obovate; upper oblong. **p.** 4–8. *Calcareous hills.* m. and s. Eu.

β. *diffusum*, Ten. Style somewhat longer than Pouch.

A. wulfenianum

11. **Wulfenianum.** Bernh Stems diffuse, hoary. Rac. terminal, solitary. Longer Fil. winged. L. hoary; lower obovate; upper lanceolate. Silicle elliptic, at last smooth, somewhat emarginate, twice as long as style. Seeds 4. **p.** 7, 8. Alps of Ovir in Carinthia. n. e. It.

12. **flexicaule.** Jor Plant everywhere covered with a white stellate pubescence. Stems diffuse. Longer Fil. winged. Silicle elliptic, swelling in the middle, not emarginate or retuse. **p.** 7. *Dry rocky.* Mount Ventous.—Jordan.

13. **campestre.** L Stem diffuse. Calyx deciduous. Silicles circular, swelling in the middle, tuberculato-hirsute, with spreading hairs; six times as long as style; in a long raceme. Seeds 4. L. hoary, lanceolate; lower obovate. **a.** 4–6. *Dry hills.* m. and s. Eur.

C. *Herbaceous, annual or biennial. Shorter Fil. with a setaceous tooth on each side of base. Flower at first yellow, afterwards white.*

14. **compactum.** " Dwarf. Pubescence stellate. Stem decumbent, somewhat tufted. L. obovate, ciliate with tufted hairs. Cal. persistent. Silicle round, entire, with hairs at the top. **a.** 3. Ætna."—Bert. *But Gussone, who says nothing about its dwarf stature, rests its difference from* A. calycinum *very much on the pubescence, not stellate, but composed of long, irregular hairs.*

15. **calycinum.** L Fil. not winged. Calyx persistent. Silicle circular, somewhat emarginate, swelling in the middle, downy, four times as long as style; in a long raceme. Seeds 4. L. obovato-lanceolate. Stem diffuse. **a.** 4–6. *Dry fields.* m. and s. Eur.

16. **minimum.** Wild Fil. winged, (besides the Tooth.) Calyx deciduous. Silicle circular, emarginate, hairless. L. hoary, lanceolate; lower obovate. Stem diffuse. **a.** 6, 7. *Sandy.* Lower Austria.

52. KONIGA. Adans

1. **leucadæa.** Bert " Hoary. Stem somewhat shrubby, erect. L. thick, lanceolate, slightly repand. Rac. nearly simple. Pet. 2-lobed. Silicle subrotundo-ovate, somewhat acute at each end, much longer than the semilinear style. Cells with about 6 seeds. **w.** 4, 5. *Rocks.* Gallipoli. Cape Leucas. I. of Diomed. *Fl. deep yellow.*"—Bert. *I place this here because Bertoloni expressly says that the Filaments are not toothed. Tenore compares it to* A. gemonense.

2. A **halimifolia.** L Stem ascending. Branches not spinescent. L. oblong, obtuse, attenuate. Pubescence sealy. Silicle circular, smooth, swelling in the middle, twice as long as style. **p.** 4, 5. *Stony hills.* Pdm. Narb. ✓

A 3. **lapeyrousiana.** Jord Stems woody, twisted at the base. Branches not spinescent. L. oblong, obtuse. Silicle elliptic, sessile. Ovules 4. Seeds 2. **w.** 5. *Rocky.* Villefranche in e. Pyr.—Jordan.

4. **maritima.** Br Stems procumbent. Branches not spinescent. L. linear-lanceolate, acute, somewhat hoary. Silicle oval, smooth, apiculate. **p.** 6–9. *Shores* of Mdt. ✓

5. **rupestris.** Stem nearly erect. Branches not spinescent. Root L. oblongo-lanceolate, acute, silvery. Stem L. few, linear. Silicle obovate, apiculate, scaly. **p.** 6. *High.* Morone. Magella. Monte Amaro in the Abruzzi.

A 6. **pyrenaica.** Lapey. Stem shrubby. Branches unarmed. L. obovate, attenuate, hoary, tomentose. Silicle elliptic, downy, tipped with a long flexuose style! **s.** 6, 7. *Rocks.* e. Pyr.

A 7. **macrocarpa.** D.C Stem branched, somewhat spinescent. L. oblong, obtuse, silvery. Silicle somewhat stalked (within the cal.), inflated, obovato-circular; somewhat emarginate, sinuate, apiculate. Ovules 8. **w.** *Calc. rocks.* s. F. ✓

8. **spinosa.** Spach Branches and old flower-stalks spinescent. L. oblongo-linear, silvery. Silicle circular, inflated, with a border, smooth, apiculate. Seeds 4. **w.** 4–6. *Calc. rocks.* s. F. ✓

53. PETROCALLIS. Br

1. **pyrenaica.** Br L. cuneate, 3–5-fid at top. *Fl. pink.* **p.** 6. *Rocky, high.* Alps. Pyr.

54. DRABA. L

A. R. perennial, tufted. L. rigid, and ciliate with rigid bristles. Fl. yellow. Sp. 1–5.

B. R. perennial, tufted. L. not rigid.

i. Fl. yellow. Sp. 6.

ii. Fl. white. Sp. 7–16.

C. R. simple. Stem leafy. Sp. 17–20.

D. R. simple, annual. Scape naked. Sp. 21.

A. *R. perennial, tufted. L. rigid, ciliated with rigid bristles. Fl. yellow.*

1. **cuspidata.** Bieb L. linear, obtuse. Scape villous. Sta. equalling Pet. Style nearly as long as silicle. **p.** 6. Tamburra. Monte Cornu. Pyr

✓ 2. **aizoides.** L L. linear, acute. Scape hairless. Sta. equalling Pet. Style equal to breadth of silicle. **p.** 3–5. *Open calcareous rocks.*

3. **Zahlbruckneri.** Host L. linear, somewhat acute. Rac.-stalk hairless. Sta. equalling Pet. Style shorter than breadth of silicle. **p.** 6, 7. *Very high granitic.* Alps.

4. **Sauteri.** Hoppe L. lanceolate. Scape smooth. Sta. half as long as Pet. Silicle subrotundo-ovate, about as long as stalk. Style shorter than width of silicle. **p.** 6, 7. *High.* On the Watzmann and Tannengebirge, near Salzburg. it. Tyr.

5. **olympica.** Sibt L. linear, keeled, ciliate, crowded. Scape leafless, velvety. Silicle ovate, villous. Style very short. *Fl. large, yellow.* Umbel about 4-flowered. **p.** Mte. Rotondo in Corsica.—Bert.

B. *R. perennial, tufted. L. not rigid or keeled.*

i. *Fl. yellow.*

✓ 6. **alpina.** L. flat, without a keel, lanceolate. Hairs branched. Silicle oblong. Style very short. Monte Moro and Turlo in Novarese.

ii. *Fl. white.*

✓ 7. **tomentosa.** Wul Scape 1–2-leaved, downy. L. ovali-oblong, with short, stellate down. Silicle ovate, ciliate; stalk downy. Style very short. **p.** 7, 8. *Fissures of dry rocks. High.* Alps.

✓ 8. **frigida.** Sauter Scape with about one subamplexicaul L. Lower L. ovate, obtuse, densely stellato-pubescent. Silicle elliptic, longer than the downy stalk. Stigma nearly sessile. **p.** 7, 8. *Rocks.* **w.** Alps of Sw. Tyr. Pdm.

v of 7 Gr. G.

9. **rupestris.** Br Scape downy, naked, or with one L. L. lanceolate, hairy, somewhat dentate. Silicle lanceolate; this and stalk pubescent. **p.** 5, 6. Ben Lawers. [D. hirta *of Smith.*]

10. **Johannis.** Host Scape about 2-leaved. L. lanceolate, stellato-pubescent, ciliate at base with simple hairs. Silicle lanceolate; stalk smooth. Style exceedingly short. **p.** 7, 8. *Very high granitic.* Alps. Sw. Tyr. Salz. ✓

11. **nivalis.** DC Scape hairless, naked, or with one or two L. L. oblongo-linear, ciliate at base with simple hairs. Silicle elliptic-oblong; this and stalk quite smooth. **p.** 7, 8. Pasterze in Carinthia. s. Alps. v. of 10 Koch.

12. **Wahlenbergii.** Hart Scape 1–3-leaved. L. lanceolate, attenuate, hairless, or only ciliate with simple or forked hairs. Silicle oblongo-lanceolate, or lanceolate; stalk smooth. Style exceedingly short. **p.** 7. *Snowy, stony.* Alps. ✓

- α. *helvetica*, DC. L. ciliate with simple hairs, and sometimes a few simple hairs on the surface.
- β. *lapponica*, DC. L. ciliate; hairs simple or forked; a few stellate hairs on the inner L.
- γ. *lævigata*, Hoppe. Altogether hairless.

13. **Traunsteineri.** Hoppe Scape about 2-leaved. L. lanceolate, stellato-pubescent, ciliate at base with simple hairs. Silicle lanceolate; stalk smooth. Style twice as long as broad. **p.** 7, 8. *High rocks.* Kitzbuhel in Tyrol.

14. **stellata.** Jacq Scape one-leaved, downy. L. ovali-oblong, with fine starred down. Silicle oval; stalk smooth. Style equalling width of silicle. **p.** 6, 7. *Fissures of rocks. High.* Pyr. Sty. Austr. it. Alps.

15. **lævipes.** DC "Scape naked, or with one L. pubescent. L. ovate, tomentose, with close starry down. Silicle linear, quite smooth; stalk smooth. **p.** *Rocks.* Port d'Oo and Mte. Maladetto, Pyr."—DC. var of 7. Gr. G.

16. **ciliata.** Scop L. on scape two or three. L. ovate, with short acumen, and a denticulate and ciliate cartilaginous margin! those of the scape oblong. Silicles linear; these and stalks quite smooth. **p.** 5, 6. *Rocks and stones,* on Mount Nanas in Carniola, &c. *Very rare.*

C. *R. simple. Stem leafy.*

17. **incana.** L Stem branched, velvety. Down starry. L. ovate, dentate. Silicle oblong, smooth, somewhat twisted, longer than the hairy stalk. **b.** 5, 6. *Calc. mns.* ✓

18. **stylaris.** Gay Stem somewhat branched. Down starry. L. oblong, somewhat dentate. Fl.-stalk shorter than the oblong, flat, downy silicle. **b.** 6. *Rocky.* s. Tyrol. Vall. *Very rare.*

19. **muralis.** L Stem branched, downy. L. somewhat cordato-amplexicaul, dentate, hirsute. Silicle elliptic-oblong, smooth; stalks horizontal, about twice as long as silicle. Seeds 12–16. **a.** 4, 5. *Shady calc. rocks.*

20. **nemoralis.** nemorosa L. Fl. Stem branched, downy. L. ovate, dentate, downy. Silicle elliptic-oblong, velvety. Stalks horizontal, three or four times as long as silicle. Seeds 32–36. **a.** 4–6. Pdm. Mte. Canigou in Pyr.

D. *R. simple and annual. Scape naked.*

21. **verna.** L Silicle elliptic, shorter than stalk. Hairs almost all branched. Seeds 5–15. **a.** 2–4. *Dry.*

β. præcox. Silicle nearly circular.

55. LUNARIA. L

1. **rediviva.** L Silicle lanceolate, attenuate at each end. **p.** 5–7. *Woody hills.* Fr. Ger. Sw. n. It. Mönch

2. **biennis.** Silicle oval, obtuse at each end. **b.** 4, 5. *Woody hills.* Ger. Sw. It.

56. PETTARIA. L

1. **alliacea.** L Stem L. sagittate, amplexicaul. Silicle flat, smooth. **p.** 5–7. *Shady rocks.* Aus. Pdm.

57. CLYPEOLA. L

1. **Jonthlaspi.** L Margin of Silicle entire, ciliate. **a.** 4, 5. *Dry hills.* s. Eur. *Fl. small, yellow.*

Delile

C. cyclodontea, discovered by Mons. Delile, at Port Juvenal, with a dentato-lacerate margin to the pouch, seems to have been brought accidentally with wood, and not in any degree to have established itself.

Tribe IV. *CAMELINEÆ.*

58. CAMELINA. Crantz

1. **sativa.** Crantz Silicle pyriform, 4-ribbed, terminated by the style. L. quite entire, or only denticulate. **a.** 6. *Among flax.*

2. **microcarpa.** Andrz "Like *C. sativa*; but the sepals are narrower, the silicles smaller, and with a more marked border. The dorsal nerve of the valves does not reach the summit, and the seeds are much smaller **a.** 6, 7. *Calcareous hills.* Lorr."—Godron.

3. **dentata.** Pers Silicle globoso-pyriform, 4-ribbed, terminated by the style. L. repando-dentate or pinnatifid, contracted above the lobes of the sagittate base. **a.** 5, 6. *Fields.* Alps. Lorr. n. Germ. ✓

Tribe V. *VELLEÆ.*

Vella L 59. CARRICHTERA.

1. **annua.** L Silicle bristly. L. bipinnatifid. **a.** 3, 4. *Dry calc. hills.* Sic. Calarim in Sard.

60. SUCCOWIA.

1. **balearica.** Silicle ovato-globose, with prickly valves. **a.** 5. *Fields on the shore.* Sic. Sard. ✓

Tribe VI. *NUCUMENTACEÆ.*

61. EUCLIDIUM. Br.

1. **syriacum.** Br. Silicle rough. Style subulate, persistent. Stem L. lanceolate, stalked. **a.** 4–6. *Sandy uncult.* Vienna. Carniola. ✓

62. NESLIA. Desv

1. **paniculata.** Desv L. lanceolate, sagittate, amplexicaul. **a.** 6–8. *Sandy fields.* ✓

63. ISATIS. L

1. **alpina.** All Silicle obtuse at each end, with a broad, somewhat leafy border, quite smooth, three times as long as broad. **p.** 8. Mte. Vesulo in Pdm.

2. **tinctoria.** L Silicle narrowed at base, smooth, three times as long as broad. Root L. crenate. Stem L. biauriculate. **b.** 7. *Stony, open.* m. and s. Eur. ✓

3. **canescens.** DC Silicle cuneate, or lineari-pyriform. Stem L. sagittate, with broad, short, acute auricles, four times as long as broad. **b.** 5. *Open coasts.* Toulon. Lig. Sic. v of I. Grg ✓

4. **rostellata.** Silicle obovato-lanceolate, narrowed into a beak. Root L. on short stalks. Stem L. sagittate, with long, acuminate auricles. **a.** 5, 6. *Fields.* Sard.

64. CALEPINA. Desv

1. **Corvini.** Desv Lower L. stalked; upper sessile, hastate. **a.** 4–6. *Uncultivated.* m. and s. Eur. ✓

65. BUNIAS. L

1. **Erucago.** L Silicle 4-celled, 4-edged; angles with toothed wings. Root L. runcinate. **a.** 3, 4. *Fields.* s. Eur. ✓

2. **orientalis.** L. Silicle 2-celled, without angles or wings. Root L. runcinate. **b.** 6, 7. *Dry grassy hills.* Lubeck. Warnemünde. Limburg. ✓

66. MYAGRUM. L.

1. **perfoliatum.** L. Root L. pinnatifid. Stem L. amplexicaul. **a.** 5–7. *Fields and sandy.* m. and s. Eur. ✓

67. CRAMBE. L.

1. **maritima.** L. Lower joint of Silicle short and thick. Longer Fil. forked. L. subrotund, wavy, dentate, glaucous, very smooth, as well as the stem. **p.** 5, 6. *Sea-shore.*

2. **tatarica.** Jacq Lower joint of Silicle short and thick. Longer Fil. forked. Root L. decompound. Lts. oblong, dentate, or incise, rough when young. **p.** 4, 5. *Fields.* Moravia.

3. **hispanica.** Lower joint of Silicle long and cylindric. Longer Fil. toothed. L. lyrate, rough; terminal lobe cordato-orbicular. **a.** 4. *Open hills.* Catania. Sard.

SILIQUOSE.

Tribe VII. *LOMENTACEÆ.*

68. CAKILE. Tourn

1. **maritima.** Scop Silicle 2-edged; upper joint ensiform, (arrow-shaped, Sm.) L. fleshy, pinnatifid, obtuse. **a.** 5–9. *Sandy shores.* ✓

β. *ægyptiaca.* L. sinuate or undivided.

69. RAPISTRUM. Börhave

1. **perenne.** Allioni Silicle hairless; upper joint ovate, longer than conical style. L. pinnatifid, inciso-dentate, acute. **p.** 6, 7. *Fields.* e. Fr. Germ. Sw. n. It. ✓

2. **orientale.** DC Silicle hairless, furrowed, ovate, about as long as slender style. L. oblong, dentato-sinuate. **a.** 5, 6. s. It. *I have a specimen, I believe, from Sardinia, and given me by Professor Moris, in which the lower cell is reduced to a mere stalk, about half as long as the upper. In* R. rugosum *it is thick, and about as long as the upper; but I hardly ever find a seed in it.*

3. **rugosum.** All Silicle downy; upper joint subglobose, ribbed, rugose, shorter than subulate style. L. obtuse, dentate. Root L. somewhat lyrate. **a.** 4, 5. *Fields and sandy.* m. and s. Eur.

70. MORISIA. Gay

1. **hypogæa.** Gay Silicle hispid. Scapes 1-flowered, curving down after flowering. **a.** 3, 4. Cors. Sard.

71. ENARTHROCARPUS.

1. **arcuatus.** Labill Pod round, tomentose, rough. Lowermost flower-stalks alone bracteate. **a.** 3, 4. Port Juvenal.

2. **lyratus.** DC Pod compressed, knotty, striped longitudinally. Flower-stalks nearly all bracteate. **a.** Port Juvenal.

I do not know if these are naturalized, or if they have only been found accidentally.

3 clavatus. do

72. RAPHANUS. L.

A. *Pod spongy, hardly jointed. Seeds irregularly disposed.*

1. **sativus.** L. Pod ovoid, very acuminate, and (including the beak) about as long as stalk. **a.** 5, 6. *Escapes.*

B. *Pod jointed. Seeds placed one above another.*

2. **fugax.** Pods obscurely striate. Joints 2–6, not very distinct, and not separating. L. simply lyrate, hispid; upper stem L. lanceolate. **b.** 4, 5. *Corn.* Val. de Mazzara.—Guss.

3. **Landra.** Moretti Pods striate. Joints 2–5, close, at length separating; exclusive of beak, about as long as stalk. L. simply or interruptedly lyrate. **a. b.** 4, 5. *Stony.* s. It. Sic.

4. **maritimus.** Sm Pods ribbed (when dry). Joints 2–5, separated by isthmuses; exclusive of beak, hardly longer than stalk. L. interruptedly lyrate; upper lanceolate. **b.** 7, 8. *Shores.* s. Eng. Brest.

5. **Raphanistrum.** L. Pods ribbed (when dry). Joints 3–7, mostly with isthmuses; exclusive of beak, about twice as long as stalk. **a.** 6, 7. *Fields.* ✓

Tribe VIII. *BRASSICEÆ.*

73. SINAPIS. L.

Taken chiefly from De Candolle. The nerves of the valves are not mentioned in a majority of the species.

A. *Beak ensiform.*

1. **alba.** L. Beak as long as pod, or longer, *each more than half an inch.* (Valves of pod 5-nerved, Koch.) Stalks nearly horizontal. L. ✓

lyrato-pinnatifid; ultimate Lt. somewhat lobed. **a.** 5, 6. *Corn and uncult.*

Lag

2. **hispida.** Pod strigose. Beak longer than pod. Stalks erect. L. lyrate; ultimate Lt. subrotundo-cordate, undivided, toothed. **a.** 5. Nice. v. cf.

Lag

3. **dissecta.** Pod nearly erect. L. pinnatipartite. Lobes pinnatifid. Segments linear-oblong, sinuato-dentate, or incise. **a.** 3, 4. *Among flax.* Sic.

4. **apula.** "Pods smooth, spreading. Style oblong, compressed. L. runcinato-pinnate, hairless. Segments lanceolate, dentate, acute. **a.** *Fields.* Apulia."—DC. *Not noticed by Bert.*

B. *Beak conical or cylindrical, somewhat compressed, and sometimes swelled out by a seed.*

5. **arvensis.** L. Pod angular, much longer than beak, *about* $\frac{6}{8}$ *and* $\frac{4}{8}$ *of an inch.* Beak usually one-seeded. Valves 3-nerved. L. ovate, lowermost somewhat lyrate. **a.** 5. *Fields.*

Murr

6. **orientalis.** "Pod somewhat 4-edged, torulose, beset with deflexed hairs, shorter than the slender beak. **a.** m. Eur."—DC. v. cf. S. Koch

7. **pubescens.** "Woody, softly villous. Lower L. lyrato-pinnatifid; upper oblong; both unequally toothed. Pods 8–10 *lines long*, terete, hirsute. Beak compressed, conical (hardly 3 lines long, Guss.), with hairs directed upwards. **w.** *Almost all the year.* Garg. Sic."—Bert.

8. **panormitana.** "Pods hairless, adpressed, torulose, longer than beak. Stem rough at the base, somewhat branched. L. stalked, undivided, lanceolate, denticulate, rough. **b.** 5. *Barren.* Mte. Peregrino."—Guss. *from Presl.*

Erucastrum Koch

9. **incana.** Pods adpressed, somewhat torulose, $\frac{3}{8}$ *inch long.* Valves 1-nerved. Beak $\frac{3}{16}$ *inch long*, with one or two seeds. Seeds slightly oval, shagreened. Stem branched, rough towards base. L. lyrate, rough, terminal. Lts. rounded. Upper L. linear-lanceolate. **b.** 4–6. *Fields and uncult.* s. Eur.

β. *heterophylla.* Terminal division of L. oblongo-lanceolate.

Brassica Koch

10. **nigra.** Pod 4-edged, adpressed, $\frac{1}{2}$ to $\frac{3}{4}$ *inch long.* Beak cylindrical, seedless, $\frac{1}{8}$ *long.* Seeds round, shagreened. Lower L. lyrate; upper lanceolate, entire, hairless. **a.** 6, 7. *Clayey banks.*

11. **amplexicaulis.** Pod nearly terete, small, spreading, $\frac{1}{4}$ *to* $\frac{1}{2}$ *inch.* Beak linear, hardly $\frac{1}{12}$ *inch.* Root L. lyrato-pinnatifid, or sinuato-dentate. Stem L. amplexicaul; upper cordate. **a. b.** 9, 10. *Clayey fields.* Sic.

12. **virgata.** "Pods small, terete, spreading, $\frac{1}{2}$ *to* 1 *inch long.* Beak slender, somewhat compressed, 2 *to* 5 *lines*, seedless. L. somewhat fleshy, glaucescent; lower lyrate. Lateral divisions oblong; upper few, linear-oblong. Stem shrubby at base, with rodlike branches. **p.** 5, 6. *Sandy or rocky hills on coast.* Sic. Cal."—Guss.

74. BRASSICA. L.

A. *Sepals at last spreading. Shorter Anthers ascending. Root L. lyrate; terminal divisions very large.*

1. **Napus.** L. L. glaucous, quite smooth. Stem L. pinnatifid, crenate; upper cordato-lanceolate, amplexicaul. Pods divaricato-patent. Beak taper. **b.** 5. *Uncult.*

2. **præcox.** L. glaucous, smooth; upper cordato-lanceolate, crenate. Pods erect. **a.** *Cult.* in Alsace. *Escaping.*

3. **campestris.** L. L. somewhat glaucous, somewhat fleshy. Root L. bristly on the back of the midrib, dentate. Stem L. cordato-amplexicaul, acuminate, somewhat pinnatifid. R. taper. Pods ascending. Beak taper. **a. b.** 6, 7. *Moist fields and banks.* Eng. Fr. Franconia.

4. **Rapa.** L. Root L. not glaucous, bristly on the back. Stem L. cut; upper smooth, entire. R. subglobose. Pod veiny. Beak taper. **b.** 4. *Fields. Escapes.* v. cf. 3

B. *Sepals and Anthers erect.*

* *Root L. lyrate* (*except, perhaps, in* balcarica *and* Richerii); *terminal lobe very large, forming the greater part of the L.*

5. **oleracea.** L. L. quite smooth, fleshy, waved, lobed. Pod sessile within the calyx. Beak very short, seedless. **b.** 5, 6. *Chalk and limestone cliffs.* s. Eng.

Moris

6. **insularis.** Woody. Stem erect. L. somewhat fleshy, glaucous; lower undivided or lyrate; upper oblongo-lingulate, serrate. Corolla large. Pet. obversely oblong, *white, with bloody veins.* Pod long, thick, with two acute and two obtuse edges. Beak conico-subulate, seedless. **w.** 4, 5. *Stony.* Sard."—Bert.

Lois Gay

7. **balearica.** (robertiana ?) Hairless. Lower L. stalked, sinuate, somewhat panduriform, fleshy. Stem shrubby at base. Beak short, seedless. **b.** 5. Bau Rousse, near Nice. Mt. Condom, near Toulon ?

8. **rupestris.** Smooth. Stem L. oblongo-lanceolate, nearly entire. Stem shrubby at base. Pod not quite sessile, somewhat 4-edged. Beak thick, conical, seedless. **p.** 2, 3. *Calc. rocks.* Sic.

9. **villosa.** L. hoary, with a dense pubescence; terminal lobe sinuato-dentate. Stem shrubby, erect. Pod somewhat 4-edged, short, seedless. **p.** 2–4. *High rocks.* Sic.

10. **incana.** Hoary with soft down. Terminal lobe of lower L. toothed; upper L. eroso-sinuate, auricled. Stem shrubby at base. Pod smooth, terete. Beak short, (containing one or two seeds, Guss.) **p.** 3, 4. *Rocky shores.* Nap. Sic. *Very rare.*

✓ 11. **fruticulosa.** Lower L. with a few bristles on the back, lyrate. Lobes obtuse, dentate. Stem shrubby and hispid at base, hairless at top. Pod torose, four times as long as beak, which is sometimes 1-seeded. **p.** *All the year.* Nap. Cal. Sic.

✓ 12. **Richerii.** Vill Smooth. Lower L. stalked, oblong, somewhat toothed; upper few, linear-lanceolate. *Fl. resembling those of* B. oleracea. Beak with 1 or 2 seeds. **p.** 7, 8. *Stony mountains.* Dau. Prov. Pdm.

13. **macrocarpa.** "Quite smooth. Lower L. sublyrate. Stem shrubby. Pods terete, very thick, somewhat spreading. Beak thick, conical, acute. 1–2-seeded. **p.** 2, 3. *Calc. marit. rocks.* Sic."—Guss.

** *Lower L. runcinate.*

14. **Gravinæ.** "Hispid. Lower L. oblong. Segments nearly entire. Cal. somewhat spreading. Style filiform. Stigma capitate. Pods terete, smooth. Stem nearly leafless, shrubby at base. **p.** *Mns.* Abruzzi."—Ten.

*** *Scape naked!*

✓ 15. **humilis.** D.C Root L. fleshy, pinnatifid. Segments entire, generally with a terminal hair. Pods spreading, attenuate. Style thick. **p.** Between Londres and Larogue, near Montpellier.

16. **repanda.** D.C Root L. fleshy, smooth, repando-dentate. Scape naked. Style slender, distinct from the pod. **p.** 7, 8. *Open hills.* Dau. Prov. Pdm.

75. ERUCASTRUM.

I unite Cheiranthus *and* cheiranthiflorum *to* monense, *as being certainly the same species. How far the others are different I do not know.*

Sinapis monensis Bab

1. **monense.** Pod somewhat 4-edged, about 3 times as long as beak (6-7 times, C. and G.). L. pinnatipartite. Stem L. very few; lowest division distant from stem. **p.** or **b.** 7, 8. *Sandy fields and uncult.* w. Eng. Fr. w. G. ✓

2. **Candollii.** "L. runcinate, nearly smooth. Lobes unequal, obtusely sinuate. Stem hispid at base. **a.** *Sandy, uncult.*"—DC., under Brassica Erucastrum. *He quotes Linn. and* Sisymbrium Erucastrum *of Villars.*

3. **ochroleucum.** "Like the last; but the stamens, instead of being turned outwards, are pressed against the pistil, and the lower divisions of the middle stem L. are distant from the stem, while, in the preceding, these divisions are close to the stem, and embrace it. Nancy. *Very rare.*"—Godron. *It seems doubtful whether both of these do not belong to* E. obtusangulum.

4. **Tournefortii.** "Pods torose, smooth, at last spreading. Beak about half as long as pod, conical, 1-seeded. Root L. hairy and ciliate, lyrato-pinnatipartite. Lobes serrato-dentate; the lateral oblong, linear. Stem L. linear, narrow. Stem straight. Branches leafless. **b.** 3, 4. *Dry sandy hills.* s. Sic."—Guss.

5. **valentinum.** "Pods nearly terete, smooth, somewhat spreading, longer than the 1–2 seeded beak. L. somewhat rough. Root L. lyrate, or pinnatifido-lyrate. Lobes obtuse, irregularly dentato-repand. Stem L. few, sessile; uppermost linear, nearly entire. Stem herbaceous, erect, branched. **a.** 3, 4. Fiumara di Palmi. Sic."—Guss.

6. **obtusangulum.** Rch Pods spreading. Valves 1-nerved. Beak short, often containing a seed. L. pinnatifid. Fl.-stalks without floral L. **p.** 6, 7. *Fields and waste.* m. and s. Eur. ✓

7. **Pollichii.** Spen Pods spreading. Valves 1-nerved. Beak short, seedless. L. pinnatifid. Lower Fl.-stalks with floral L. **p.** 5, 7. *Fields.* Rhine. ✓

In this and the preceding the seeds are truly oblong, though not much longer than broad, and finely striato-shagreened.

76. DIPLOTAXIS. D.C

A. *Pod drooping, placed on pedicel within the calyx. Style hardly any.*

1. **crassifolia.** Pod obtuse. L. cuneiform-oblong, inciso-dentate, nearly all smooth. Stem shrubby at base. **p.** 5, 6. *Gypsaceous rocks.* s. Sic.

B. *No Pedicel within the calyx. Pod not drooping.*

2. **erucoides.** D.C Pods nearly erect. Style ensiform. L. sessile, runcinato-lyrate, dentate. *Pet. white, with purplish claw.* **a.** *All the year. Fields and vineyards.* Mdt. Fr. It.

3. **tenuifolia.** D.C Smooth. Fr.-stalks spreading. Style sub-cylindrical. Stem leafy. Upper L. undivided; lowest pinnatipartite. Pet. obovato-subrotund, with a short claw, *yellow.* Pedicels much longer than Fl. **p.** 5, 9. *Walls, fields, and uncult. Varies with L. doubly pinnatifid, and all undivided.*

4. **muralis.** D.C Pods ascending, on spreading stalks. Style cylindrical, short. *L. with scattered hairs.* Root L. dentato-sinuate or lyrate, smooth. Pet. obovato-subrotund, with a short claw, *yellow.* Stems ascending, nearly naked. Pedicels about equalling Fl. **a.** 7–10. *Barren fields.*

5. **viminea.** D.C Pods erect. Style somewhat cylindrical, short. Root L. sinuato-lyrate, very obtuse, smooth. Pet. oblongo-obovate, attenuate. Stems ascending, naked. Pedicels shorter than Fl. *Pet. only about as long as calyx.* **a.** 4–11. *Dry clay.* Coasts of Mdt.

6. **Barrelieri.** Pods erect. Style angular, short. Root L. runcinato-dentate, hispid. Stems ascending, naked; upper part smooth. Pedicels shorter than Fl. **a.** *Dry.* It.? *Not in Bert. or Guss.*

7. **scaposa.** "Pods erect. Style short, somewhat filiform. Root L. smooth, oblong, pinnatifid. Lobes short, entire. Stems naked, very short, erect; upper part hairless. **a.** 3, 4. Lampedusa."—DC.

8. **saxatilis.** D.C Pods erect, attenuate. Style short, conical. Root L. somewhat fleshy, pinnatifid. Segments entire. Stems nearly naked, erect. **p.** *Rocky hills.* Digne. Mt. St. Victoire.

77. ERUCA. D C

1. **sativa.** Lam "L. lyrato-pinnatifid. Segments dentate, ~~acute.~~ Stalk shorter than the deciduous calyx. **a.** 3, 4. *Corn.* s. Eur. Nancy.

2. **hispida.** "L. lyrato-pinnatifid. Segments dentate, acute, the terminal obtuse. Stalk longer than the deciduous calyx. **a.** *Summer. Fields.* Agosta?"—Guss. *from Presl.*

78. MORICANDIA. D·C

1. **arvensis.** D.C Pod 4-edged. Stem L. cordato-amplexicaul, quite entire. **b.** (suffr. Guss.) 4–6. Prov. Ventimiglia. Sic.

Tribe IX. *SISYMBRIEÆ.*

79. SISYMBRIUM L

A. *Fl. axillary.*

1. **polyceratium.** L Pods erect, 2 or 3 together. L. sinuato-runcinate. **a.** 4–8. *Dry.* s. Eur.

B. *Fl. in Rac. Pods subulate, adpressed.*

2. **officinale** L L. runcinate. Stem with deflexed bristles. **a.** 6, 7. *Waste.*

C. *Fl. in Rac. Pods cylindrical, spreading.*

3. **strictissimum.** L L. lanceolate, undivided. Cal. spreading. Seeds linear-oblong. **p.** 5–7. *Moist valleys.* m. Eur.

4. **hispanicum.** Jacq "L. lanceolate, toothed, sessile, hairless. Branches divaricate. Pod erect. Seeds oval, three-edged. **b.** s. Fr.?

5. **austriacum.** Jacq "Stem and L. nearly smooth. L. runcinato-pinnatifid. Divisions triangular, acute, or lanceolate; the terminal larger; those of upper L. elongated. Sepals spreading. Pods approximate, spreading, or declined on an ascending stalk; younger exceeding Fl. **b.** 5, 6. *Stony hills.* G. *occ.*

"*β. taraxacifolium.* Pods with a few bristles. s. Fr.

"*γ. acutangulum.* Pods shorter, arching towards the common stalk. Alps. Pyr."—Koch.

6. **erysimoides.** L. lyrato-pinnatipartite. Divisions unequally and acutely toothed; the terminal one very large. Rac. lax. Fr.-stalks very short. Pods nearly horizontal. **a.** 3. *Calc. hills.* Gartelli in Sard.—Bert.

7. **Loeselii.** L Stem and lower L. hispid. L. runcinato-pinnatifid. Divisions without auricles; those of lower L. oblong, of upper lanceolate; terminal division large, hastate. Sepals spreading. Pods ascending, twice as long as spreading stalk. **b.** 6, 7. *Walls and rubbish.* G. *occ.*

8. **Irio** L L. runcinato-pinnatipartite. Divisions without auricles; those of lower L. oblong, of upper lanceolate. Sepals somewhat spreading. Pods spreading, four times as long as stalk. **b.** 5–7. *Cult. and waste.* lower Austr. Thuringia. Vall. Fr. It.

9. **altissimum.** L "Upper part smooth. Stem

tall. L. pinnatipartite. Divisions of lower L. lanceolate, somewhat dentate; of upper long, linear, nearly entire, flaccid. Anthers very long. Pods filiform, hairy when young. **a.** 5. *Grassy.* All' Aequasola near Genoa."—Bert. [illegible]

✓ 10. **Columnæ.** Jacq L. L. runcinate. Divisions auricled. Sepals erect. Pod many times as long as stalk. **b.** 6, 7. s. c. G. s. Fr. It.

✓ 11. **pannonicum.** Jacq L. runcinate. Divisions auricled. Sepals widely spreading. Stalk nearly as thick as the pod. *Cult. and waste.* **b.** 5–7. c. G. Mannheim.

✓ 12. **Sophia.** L L. bi-, tri-pinnate. Divisions linear. Pod three times as long as stalk. **a.** 6–8. *Waste.*

D. *Pod compressed, or somewhat 4-edged.*

13. **bursifolium.** ~~pinnatifidum DC~~ L. Vill L. pinnatifido-lyrate. Stem erect, leafy. Pods somewhat spreading. Style short, somewhat obtuse. **a.** 3, 4. *Moist hills.* Sic.—Guss.

✓ 14. **Thalianum.** Gaud L. oblongo-lanceolate, undivided, toothed. Seeds oblong. **a.** 4–6, and 9, 10. *Walls and waste.*

80. ALLIARIA. Andr

✓ 1. **officinalis.** Andr L. cordate. Pods prismatic, many times longer than their stalks. **a.** or **b.** 4, 5. *Banks.*

81. ERYSIMUM. L

A. Style filiform, longer than pod. Sp. 1.

B. Style much shorter than pod.
- **i.** Pod 2-edged. Sp. 2.
- **ii.** Pod with 4 nearly equal angles.
  - **a.** Stalks 2 or 3 times calyx. Sp. 3.
  - **b.** Stalks about equal to calyx. Sp. 4–7.
  - **c.** Stalks hardly half calyx. Sp. 8–19.

C. Style hardly any. Petals erect. L. amplexicaul, smooth. Sp. 20, 21.

A. *Style filiform, longer than Pod.*

1. **siculum.** Pod prismatic, hoary, covered with the persistent calyx. Fl. on short stalks. L. lineari-lanceolate, quite entire. **b.** Sic. Guss. *from Sprengel.*

B. *Style much shorter than Pod.*

i. *Pod 2-edged. L. not cordate at base.*

2. **glabrum.** Pod prismatic, longer than style. Stalks as long as deciduous calyx. L. lanceolate, sinuato-dentate at base. **a.** 7. Messina.

ii. *Pod with 4 nearly equal angles.*

a. *Stalks 2 or 3 times as long as Calyx.*

3. **cheiranthoides.** L Pod twice as long as stalk. L. lanceolate, repando-denticulate, or dentate, rough with trifid hairs. **a.** 6–9. *Fields and gravelly banks.* ✓

b. *Stalks about as long as Calyx.*

4. **virgatum.** Roth Pod somewhat compressed laterally. L. quite entire, rough with trifid hairs. Blade of Pet. cuneato-obovate. **b.** 6, 7. *Bushy hills.* c. Fr. G. Sw. *rare.* ✓

5. **strictum.** DC Koch Pod somewhat compressed laterally. L. repando-denticulate, rough with trifid hairs. Blade of Pet. cuneato-obovate. **b.** 6, 7. *Walls and banks.* c. G. Banks of Maine and of Rhine. ✓

6. **canescens.** Roth DC Pod exactly quadrangular, greener and smoother on the angles. L. lineari-lanceolate (sometimes almost filiform, Gay), recurved at top. Hairs almost all bipartite, but apparently simple, the two branches being in a straight line. Barren branches in the axils of L. Sepals equal. **b.** 6, 7. *Open uncult.* s. c. G. Vall. Prov. Nice. lower Austr. ✓

7. **suffruticosum.** Spreng Pod compressedly 4-edged, tomentose within, green on the angles. L. oblongo-lanceolate, mucronate. Hairs nearly all apparently simple. **b.** 5, 6. *Uncult.* Between Verviers and Limburg.

c. *Stalks hardly half as long as Calyx.*

8. **odoratum.** Ehrh. Koch Pod greener at the angles. (Style short, stigma thick, Bert.) L. lineari-lanceolate, nearly entire. Hairs tripartite. Blades of Pet. subrotund. **b.** 6, 7. *Limestone hills.* c. Ger. ✓

9. **carniolicum.** "Hairs bi- or tripartite. Stem angular, nearly simple. Lower L. runcinate; upper narrow lanceolate, sharply serrate. Blade of Pet. subrotund. Style somewhat slender. Stigma a small, 2-lobed head. **b.** 5, 6. Mte. Maggiore in Istria."—Bert.

10. **repandum.** L Pods obtusely 4-edged, hardly thicker than the thickened horizontal stalks. L. lanceolate, acuminate, often repando-dentate, recurved at top. Hairs bi- and tripartite. **a.** 6, 7. s. c. G. ✓

11. **crepidifolium.** Rch Pet. of one colour, obtusely 4-edged; sides unequal. Flower-stalks slender. Cal. bigibbous. L. lanceolate, generally repando-dentate. Hairs bi- and tripartite. **b.** 5, 6. *Rocky hills.* Bingen. c. G. ✓

12. **rhæticum.** DC Pod hoary, 4-edged. Stigma

emarginate. L. lineari-lanceolate, entire, or remotely denticulate. Barren branches in the axils of L. Hairs bipartite. **p.** 5. *Rough hills.* s. Alps.

13. **Cheiranthus.** Pers Pod downy or hoary. Style not longer than width of pod. Barren shoots from the root; none from the axils. L. lineari-lanceolate. Hairs bipartite. **p.** 5, 6. *Rough hills, sometimes at a great elevation.* lower Aus. e. Alps.

14. **crassistylum.** "L. linear, entire, channeled, hoary with bipartite hairs. Claw of Pet. exceeding calyx. Blade obovato-oblong. Pods straight, narrower than the short Style. Stalks spreading. **b.** 7. *Coast,* between Messina and Taormina."—Guss. *from Presl.*

15. **longifolium.** "Pods somewhat spreading, thick. Stigma somewhat thick, obtuse. Blade of Pet. obovato-oblong; claw exceeding the hoary yellowish calyx. L. lanceolato-linear, somewhat repando-dentate. Stem erect, firm, nearly terete. Hairs simple, adpressed. **b.** 4, 5. *Calcareous rocks and walls.* Sic."—Guss. *Koch joins this to* virgatum.

16. **pumilum.** Gaud "Tufted. Hairs quite simple. Lower L. oblanceolate, obtuse, entire or sinuate; upper linear, acute, quite entire. Stem shrubby at base. Fl. large. Fl.-stalks about $\frac{1}{5}$ of calyx. **w.** 7, 8. Marit. Alps. Pdm."—Bert.

✓ 17. **ochroleucum.** DC Pod compressedly 4-edged. Style three times width of pod. Stigma 2-lobed. L. lineari-lanceolate, entire, or remotely dentate. Hairs bipartite. **p.** 6–8. *Stony.* Jura. Mte. Nano, in Carn. (*Fl. at first lemon-coloured, afterwards straw-coloured.*—Koch.)

✓ 18. **helveticum.** DC Pod downy or hoary. Style two or three times as long as width of pod. Stigma emarginate. L. lineari-lanceolate. Hairs bipartite. **p.** 5, 6. *Rough hills.* Vall.

19. **bonannianum.** "L. lineari-oblong, entire. Stem ascending. Blade of Pet. obovate; claw much exceeding calyx. Cal. twice as long as stalk. Pod erect, (18 *lines long.*) Style long. **p.** 6. *High.* Madonie."—Guss. *from Presl.*

C. *Style hardly any. Pet. nearly erect. L. amplexicaul, smooth.*

20. **orientale.** Br Root L. obovate; stem L. cordate; all obtuse, glaucous. Pods 4-edged. Valves with a single nerve. **a.** 5, 6. *Fields.* Fr. Ger. Sw. *Somewhat rare.*

21. **austriacum.** Baum Root L. obovate; stem L. cordate; all obtuse, glaucous. Pod 4-edged. Valves marked with three elevated nerves. **a.** 5–7. *Rough fields.* Aus. Bavaria. Franconia.

[It seemed necessary, in this genus, where no author finds the synonyms of his predecessors correct, to adhere to one writer; and I have followed Koch, except where there are inverted commas.]

82. HUGUENINIA. Rch

1. **tanacetifolia.** Rch L. pinnate. Lts. lanceolate, inciso-serrate. **p.** 7. *High stony.* Alps. Pyr. *rare.* ✓

83. SYRENIA.

1. **angustifolia.** L. linear, quite entire. Fl. nearly sessile. Pod much longer than style. **b.** 6. *Sandy.* lower Aus. ✓

84. BRAYA.

1. **alpina.** Stern L. undivided. Root L. on long stalks. Rac. of fruit ovate, crowded. **p.** 7. *Very high.* Near the Heiligen Blut, and on e. side of Solstein in Tyrol.

2. **pinnatifida.** D.C. Stem L. pinnatifid. Segments quite entire; the terminal largest. Rac. long, without bracts. Pods smooth. **p.** 7, 8. *Very high stony, granitic.* Alps of Sw. 77. 13. Grb ✓

s. 3. **aspera.** L. L. pinnatipartite. Segments oblong, obtuse, somewhat toothed, equal. Pods cylindrico-subulate, muricate. Fl.-stalk shorter than calyx. Rac. long. Bracts 0. **p.** 6 *Moist sand or gravel.* s. Fr. ✓

4. **supina.** Koch L. pinnatifid. Segments somewhat toothed; the terminal largest. Rac. long, with leafy bracts. **p.** 7, 8. *Gravel and sand.* Lake of Joux. Alsace. Paris. ✓

85. HESPERIS. L

1. **tristis.** L Pod 2-edged, with a thickened margin! partition spongy! Stalks very long, spreading, equal in width to the pod. Pet. linear, oblique. **b.** 4–6. *Margins of woods.* Aus. It. ✓

2. **laciniata.** All Pods 4-edged, glanduloso-pubescent; partition thin. Stalks shorter than calyx. Pet. obovato-oblong. Root L. smooth, pinnatifid. **b.** 5, 6. *Open rocky.* Pdm. Prov. Dau. e. Pyr. Sic. Isl. Veglia. ✓

3. **matronalis** L Pod nearly round, hairless. Pet. obovate. Stalks as long as calyx. ✓

L. ovato-lanceolate, dentate; lower sometimes lyrate. *Stem firm, upright.* Hairs branched. **b. p.** 5, 6. *Thickets and moist meadows.* m. Eur. *occ.*

β. inodora. Stem weak and diffuse; lower L. cordate.

4. **heterophylla.** Stalks as long as calyx. Blade of Pet. obovate. Stem branched, diffuse. Pods covered with short down. L. ovato-lanceolate, dentate. *Shade.* Valley of Santo Spirito, Abruzzi.

✓ 5. **runcinata.** Waldst Lower L. lyrate. Hairs of stem glanduliferous. Pet. obovate. **b.** 5, 6. *Woods.* Vienna.

86. MALCOMIA. Br

✓ 1. **africana.** Br Stem branched, diffuse. L. lanceolate, somewhat dentate. Hairs 2–4-partite. Stalks shorter than the persistent calyx. Pods rough. **a.** 5, 6. *Sand.* Coasts of Mdt. *Rare.*

✓ 2. **maritima.** Br Stem branched, erect. L. elliptic, obtuse, attenuate, entire. Hairs adpressed, 2–4-partite. Stalks somewhat shorter than calyx. Pods downy, with a long acumen. **a.** 5, 6. *Sandy shores.* s. Fr.

3. **orsiniana.** "L. oblong, acute, slightly serrate. Pet. a little exceeding calyx, obovate, obtuse. Pods compressed, with a short subulate point. **a.** 7. Monte Cornu."—Bert.

✓ 4. **littorea.** Br Stems numerous, erect. L. lineari-lanceolate, nearly entire, hoary with short starry hairs. Stalks about as long as calyx. Pods hoary. Style subulate. **a.** 6–8. *Sandy shores* of Mdt. and of Bay of Biscay.

✓ 5. **parviflora.** DC Stem branched, erect. L. oblong, obtuse, nearly entire. Hairs in stars. Stalks at last as long as calyx. Pods hoary. ("Stig. obtuse," Guss.) **a.** 3–5. *Sandy shores* of Mdt.

Tribe X. *ARABIDEÆ.*

87. MATTHIOLA. Br

A. *Stigma thick on the back, not horned.*

1. **rupestris.** Stem shrubby at base, erect, branched. L. lanceolate, acute, quite entire, downy. Pods subcylindrical, without glands. Stigma sometimes with short horns. Pet. obovate. **p.** 2–4. *Calc. rocks.* Capri. Sic. Picenum.

2. **incana.** Br Stem shrubby at base, erect, branched. L. lanceolate, obtuse, quite entire, or somewhat wavy, hoary. Pods nearly cylindrical, without glands. Pet. obovate. **p.** 3, 4. *Calc. rocks.* Coasts of Mdt. ✓

3. **annua.** Stem herbaceous, erect, branched. L. lanceolate, obtuse, hoary. Pods cylindrical, without glands. Pet. obovate. **a.** *Sandy shores.* ("s. Eur.," DC.) *These three form, perhaps, but one species.*

4. **undulata.** Quite hairless. Stem shrubby at base, erect, branched. L. lineari-lanceolate, undulate, recurved. Pods compressed, without glands. Pet. obovate. **p.** 3, 4. *Calc. rocks.* Coast of Sicily.

5. **sinuata.** Br Stem nearly erect, herbaceous, branched. L. oblong, downy; lower sinuate. Pods compressed, rough with glands. Pet. obovate. **b.** 7, 8. *Sandy shores, occ.* ✓

6. **varia.** D.C Stem erect, with about one L. at base. L. linear, quite entire, attenuate, hoary, with a somewhat sheathing expansion at the base. Fl. nearly sessile. Pet. oblongo-obovate. Pods compressed, without glands. **p.** 5, 6. *Micaceous gravel.* Valleys of Upper Vallais. Veronese. ✓

7. **tristis.** Br Stem shrubby at base, branched, erect. L. tomentose, linear, entire, or dentate. Fl. subsessile. Pet. oblong, *purplish brown.* Pods nearly terete, glandular. **p.** 4–6. *Stony calc.* s. Eur. ✓

B. *Stigma horned.*

8. **coronopifolia.** Stem erect, much branched from base. L. linear, *dentato-pinnatifid,* hoary. Pods somewhat tomentose, with three short points, without glands. Pet. oblong. **p.** 5, 6. *Calc. rocks.* Coasts of Sic.

9. **patens.** Stem diffuse, branched, herbaceous. L. lanceolate, quite entire, tomentose. Pods terete, spreading, rough with glands. **a.** 6, 7. *Sandy shores.* Patti and Milazzo in Sic. Guss. *from Presl.*

10. **tricuspidata.** Br Stem nearly erect, branched. L. sinuato-pinnatifid. Pod with three acute, nearly equal points, without glands. Pet. obovate. **a.** 4–6. *Sandy shores* of Mdt. ✓

88. CHEIRANTHUS. DC

1. **Cheiri.** L L. lanceolate, quite entire. Hairs, if any, bipartite, adpressed. Pod linear. Stigma nearly sessile, with recurved lobes. **b. p.** 3–5. *Walls and rocks.* ✓

89. BARBAREA. Br

1. **vulgaris.** Br Lower L. lyrate; pairs of Lts. about 4. Width of L. on the upper lobes equal to that of the roundish sinuato-dentate terminal lobe; upper L. obovate, dentate. Rac. of flowers crowded. Young Pods obliquely erect. **b.** 5–7. *Moist meadows and banks.*

β. *arcuata.* Young Pods spreading.

2. **stricta.** Andr Lower L. lyrate; pairs of Lts. about 3, very small. Width of L. in the upper much less than that of the oblongo-ovate, terminating lobe; uppermost L. obovate, repando-dentate. **b.** 4, 5. *Moist.*

3. **sicula.** Presl "L. pinnato-lyrate; terminal lobe of lower cordato-ovate, entire; of upper oblongo-cuneate, dentate. Stem erect. Rac. leafless. Pods erecto-patent, about six times stalk. **b. p.** 5, 6. *Rills and moist.* Madonic."—Guss.

4. **bracteosa.** "L. pinnato-lyrate; terminal lobe of lower cordato-ovate, entire; of upper oblongo-cuneate. Stem erect. Rac. with bracts. Pods closely adpressed, full six times as long as stalk. **b. p.** 4, 5. *Moist hills.* Sic." — Guss. *Gussone has neither* vulgaris *nor* stricta *in the Sicilian Flora.*

5. **intermedia.** Boreau "Lower L. lyrate; terminal lobe somewhat incise. Stem L. lyrato-pinnatifid. Pods numerous, crowded, somewhat adpressed, short, terminated by a short conical style. **b.** 4–6. *Moist. Distinguished from* vulgaris *by its pinnatifid upper L., and from* præcox *by its short pod.*"—Boreau. B. augustana *of Boissier seems to be the same plant.*

6. **præcox.** Br Lower L. pinnate. Pairs of Lts. 5–8. Terminal lobe subrotundo-cordate. Upper L. pinnatifid. Segments linear, entire. Auricles ciliate. **b.** 4, 5. *Moist.* n. G. Fr. E at Beer.

7. **rupicola.** Moris "Stem anguloso-striate. Lower L. undivided, cordato-ovate, on long stalks, sometimes lyrate; upper pinnatifid. Divisions few, linear, spreading. Auricles hairless. Pods very long. **p.** 5, 6. *Mountain rills.* Sard."—Bert.

90. NASTURTIUM. Br

1. **officinale.** Br Pods linear (eight or ten times width), about as long as stalk. L. pinnate. Lts. ovate, repand. *Fl. white!* **p.** 6, 7. *Brooks.*

β. *siifolium.* Lts. lanceolate.

2. **sylvestre.** Br Pods lineari-oblong (four or five times width), about as long as stalk. L. pinnate; upper pinnatifid. Divisions lanceolate, incise, or deeply serrate. Pet. *yellow,* twice as long as calyx. **p.** 6–8. *Wet.*

3. **palustre.** D.C Pods oval (about twice width), about as long as stalk. L. pinnatifid; lower lyrate. Divisions irregularly toothed. Auricles amplexicaul, ciliate. Pet. equalling calyx. **p.** 6–9. *Wet.* ✓

4. **lippizense.** DC Pods linear, about as long as stalk. Root L. stalked, obovate, dentate, or somewhat lyrate; upper pinnatipartite. Divisions linear, entire. **p.** 5, 6. *Rough open.* s. Carniola. Adr. G.

5. **pyrenaicum.** Br Pods oval (about twice width), about half as long as stalk. Lower L. obovate or lyrate; upper amplexicaul, pinnatipartite. Divisions linear, entire. **p.** 5, 6. *Dry.* w. Fr. G. *rare.* Pdm. Lig. ✓

6. **anceps.** Rch Pods lineari-lanceolate, about half as long as stalk. L. lyrato-pinnatifid; upper obovate, inciso-dentate, or pinnatifid. Stem erect. Pet. *yellow,* exceeding calyx. **p.** 6, 7. *Wet, occ.*

7. **amphibium.** Br Pods broadly oval or elliptic, about half as long as stalk. L. oblong or lanceolate, inciso-serrate, sometimes auricled; lower somewhat lyrate, or, if submersed, pectinato-pinnatifid. Pet. exceeding calyx. **p.** 5, 7. *Wet.* ✓

8. **fluviatile.** "Floating. L. lyrate, the last division very large, ovato-oblong, crenulate. Rac. very long, and on long stalks. Fl.-stalks short. Pods nearly globose. **p.** 3, and in Aut. River Anapo, near Syracuse."—Bert.

9. **armoracioides.** Tausch "Pods elliptic, hardly twice as long as style; half or one-third as long as stalk. L. somewhat rough beneath with very short hairs, obovato-spatulate, unequally inciso-dentate, sessile, cordato-auricular at base; the lowest attenuate into a stalk. Stem erect. Pet. exceeding calyx. **p.** 6, 7. *Moist meadows.* By the Moldau and Elbe. Boh."—Koch.

10. **terrestre** (Tausch, not of Smith). "Pods elliptic, hardly twice as long as style, two or three times shorter than stalk. L. smooth, obovate, inciso-dentate, or lyrato-pinnatifid and toothed; more or less auricled at base. Stem erect. Pet. exceeding calyx. **p.** 6, 7. *Moist meadows.* Boh."—Koch.

11. **austriacum.** Krantz Pouch globose, hardly as long as style, about $\frac{1}{3}$ of stalk. L. oblong, denticulato-serrate, cordate at base, amplexicaul; ✓ lowermost attenuate into stalk, undivided, or

incised-pinnatifid. Pet. exceeding calyx. **p.** 6, 7. *Marshes.* s. e. G.

91. TURRITIS L

✓ 1. **glabra.** L Root L. dentate, hairy. Stem L. amplexicaul, quite entire, smooth. Pods straight, six times as long as stalk. **b.** 5, 6. *Sandy or gravelly pastures.*

92. ARABIS L

A. Margin of seeds small or wanting.
- **i.** Stem L. cordate, amplexicaul.
  - **a.** Blade of Pet. spreading, quite distinct from claw. Sp. 1–4.
  - **b.** Blade erect, oblong; tapering into claw. Sp. 5–9.
- **ii.** Stem L. sessile, not cordate or sagittate.
  - **a.** Pet. erect, oblong, or narrowly cuneate. Sp. 10–14.
  - **b.** Blade spreading, distinct from claw. Sp. 15–20.

B. Seeds with a broad margin.
- **i.** Pet. oblongo-linear. Sp. 21–24.
- **ii.** Pet. with a spreading blade. Sp. 25–28.

A. *Border of seeds none, or very small, but sometimes dilated towards the top.*

i. *Stem L. cordato-amplexicaul.*

a. *Blade of Pet. spreading, distinct from claw.*

✓ 1. **brassiciformis.** Wall Erect. No barren shoots. L. smooth, quite entire. Pods ascending, on spreading stalks. Seeds without wings. **p.** 5, 6. *Rocky hills.* Vosges. Rhine. Boh. Sty.

✓ 2. **alpina.** L Barren shoots decumbent. L. lanceolate, acute, toothed, villous with branched hairs. Root L. oblongo-obovate, attenuate into stalk. Stalks longer than calyx. Pods lax, flat, with a somewhat thickened margin. (Seeds with a narrow membrane, Koch.) **p.** 3–8. *Stony mns.*

3. **albida.** "Stem ascending. L. toothed, hoary with branched hairs, somewhat tomentose. Root L. oblongo-spatulate. Pods slightly spreading, smooth. Seed with a very narrow margin of the same colour. Pet. two or three times calyx. Stalks longer than calyx. **p.** 3–5. *Shady hills.* Sic."—Guss. *Seems, from description, to be the same as Sp. 2, which is not mentioned as Sicilian.*

✓ 4. **verna.** Br Stem with spreading branches. Root L. in a rosette, obovate, attenuate. L. rough with tripartite hairs. Stalks shorter than calyx. Rac. about 6-flowered. Pods linear, spreading. Seeds without wings. (In two rows, J. W.) **a.** 4, 5. *Dry sandy.* s. Fr. It.

b. *Pet. oblong, erect, tapering into claw.*

5. **auriculata.** Lam L. somewhat dentate, rough with branched hairs; lower oval, attenuate into a stalk. Stem L. acutely cordato-auricular. Stalks hardly longer than calyx. Pods remote, spreading, hardly wider than stalk. *Seeds bordered by a dark line.* **a.** 5. *Sandy and gravelly.* s. Eur. ✓

6. **sagittata.** DC Stem, branches, and pods erect. L. somewhat dentate, rough with hairs, which are mostly branched. Root L. oblong, attenuate into stalk. Stem L. lanceolate. Auricles spreading. Pods with an almost evanescent nerve. Stalks as long as calyx. Seeds with a narrow wing, obscurely dotted. **b.** 5–7. *Walls and rocky hills.* s. Eur. ✓

7. **Gerardi.** Besser Stem, branches, and pods erect. L. oblong, dentate, rough with branched hairs. Root L. attenuate, forming a rosette. Auricles of stem L. closing on stem. Pods very slender, nearly nerveless, compressed, regularly knobbed. Seeds with a narrow margin, reticulate, punctulate. **b.** 5, 6. *Meadows and borders.* Worms. Siles. Westph. ✓

8. **hirsuta.** Br-Scop Stem, branches, and pods erect. L. dentate, rough with hairs, which are usually branched. Root L. oblong, attenuate into stalk. Stem L. ovato-lanceolate. Auricles spreading. Pods linear, with prominent nerve. Seeds without dots, somewhat winged at the top. Stalks as long as calyx. **b.** 5–7. *Fields and rough.* ✓

9. **saxatilis.** All L. somewhat dentate, rough with branched hairs; lower oval, attenuate into a stalk. Stem L. somewhat acutely cordate, auricular. Stalks 3 or 4 times as long as calyx. Pods spreading, compressed. Seeds with a narrow wing. **b.** 6, 7. Dauphiné. Savoy. Vall. Pdm. ✓

ii. *Stem L. sessile, not cordate or sagittate.*

a. *Pet. oblong, or narrowly cuneate, erect.*

10. **Allionii.** DC L. smooth. Root L. ovate oblong, attenuate, somewhat dentate. Stem L. ovate, serrate. Pods erect. Stalks not much longer than calyx. **p.** 6. *Moist meadows.* Above Casotto in Pdm.

11. **stricta.** Huds L. ciliate and with scattered hairs. Root L. obovate, sinuato-dentate. Stem L. oblong. Rac. straight, about 6-flowered. Stalks spreading, hardly longer than calyx. Pods nearly erect, with a prominent nerve. Seeds winged at top. **p.** 5. *Warm calc. rocks.* ✓

12. **ciliata.** Br Stem, branches, and pods erect. L. ciliate, generally smooth, somewhat dentate. Root L. ovali-oblong. Stem L. oblong. Pods somewhat spreading. Stalks as long as calyx. Seeds without wings or dots. **b.** 7. Alps. *Sea-side* at Renville in Cunnemara. Glen Esk.

13. **serpyllifolia.** Vill Stem flexuose. L. nearly entire, ciliato-scabrous, oval, attenuate. Rac. lax. Stalks as long as calyx. Pods erect, on a short, spreading stalk. Seeds *bordered with a dark line,* not winged. **b. p.** 6, 7. *High.* Prov. Dau. n. Sicily. Pyr. Verdun.

14. **muralis.** Bert L. hirsute with branched hairs. Root L. spatulate, obtusely dentate. Stem L. ovate, teeth acute. Rac. straight. Stalks at last longer than calyx. Pods adpressed. Seeds with a narrow wing, enlarged at the top. **p.** 4. *Rocks and walls.* Cevennes. Vaucluse. Sw. *rare.* It.

b. *Blade of Pet. spreading, distinct from claw.*

15. **procurrens.** Waldst Barren shoots creeping. L. quite entire, with short acumen; smooth, except on margin. Pods spreading. Styles half as long as breadth of pod. **p.** 4, 5. *Stony shade.* Carn.

16. **schiwereckiana.** "L. entire, rough with branched hairs. Root L. obovate, in rosettes. Stem L. oblong, erect, sessile. Stems somewhat rough. Pods erect, smooth. **p.** Austria."—DC.

17. **petræa.** Lam Stem smooth. Root L. stalked, entire, or somewhat lyrate. Stem L. oblongo-linear, entire, attenuate, smooth. Pods nearly erect, narrow linear. Stigma capitate. (Seeds bordered at top, J. W.) **p.** 7. *Rocks.* Brit. Aus. Pyr.

18. **arenosa.** Scop L. villous with forked hairs. Root L. lyrato-runcinate. Divisions extending to base. Stem L. inciso-dentate; uppermost entire. Stem branched, hispid with simple hairs. Pods and stalks spreading. **a.** 4–7. Als. Belg. Germ.

19. **Halleri.** L Lower L. stalked, cordato-subrotund, sometimes with appendages on the stalk; upper L. lanceolate. Stem weak, branched, villous. Pods and stalks spreading. **b.** 5–7. *Stony grass among mns.* Transyl. to Pdm.

β. *stonolifera.* Terminal lobe of L. cordate. **p.** Grätz and Vipaccine in Carn.

γ. *ovirensis.* Stem smooth; lower L. oval, pectinato-dentate at the base, but without detached appendages. Above Ebriac in Carinthia.

20. **cebennensis.** DC All the L. stalked, ovate, acuminate, coarsely dentate, velvety. Pods and stalks spreading. **b.** 7. *Moist shade.* Cevennes.

B. *Seeds with a broad margin.*

i. *Pet. oblongo-linear.*

21. **Turrita.** L L. acuminate, somewhat dentate, pubescent. Stem L. deeply cordato-amplexicaul. Stalks as long as calyx. Pods decurved on one side. **b.** 5. *Walls and rocky. Not common.*

22. **bellidifolia.** Jacq L. smooth, shining, nearly entire. Root L. obovate, forming a rosette. Stem L. ovate, semi-amplexicaul, numerous. Rac. erect. Stalk three times as long as calyx. Pod erect. **p.** 7, 8. *High grassy.* Pyr. Alps.

23. **cærulea.** Hänke L. smooth, shining, ciliate, ending in 2 or 3 teeth. Root L. erect, obovate, attenuate into long stalk. Stem L. few, oblong. Rac. of Fl. nodding. Stalks as long as calyx. Pods erect. (Seeds in two rows, J. W.) **p.** 7, 8. *Snowy.* Alps.

24. **pumila.** Jacq L. sessile, entire, or slightly denticulate, shining, but with scattered hairs. Root L. obovate, forming a rosette. Stem L. ovato-oblong. Rac. nodding when in flower. Stalk twice as long as calyx. Pods erect. **p.** 6, 7. *Gravel.* Alps.

ii. *Blade of Pet. spreading. Stem-L., if any, sessile.*

25. **vochinensis.** Spreng "L. ciliate. Hairs bipartite, adpressed. Root L. obovate. Stem L. oblong, few. Pods 4–8 seeded, as long as stalk. Pet. obovate, attenuate, 2 or 3 times as long as calyx. **p.** 7. *Mns.* Carn."—DC.

Koch places A. vochinensis *among those which have little or no margin to the seeds, and describes it with creeping runners. He adds that it is, perhaps, a variety of* A. procurrens, *from which it only differs by having shorter pods, longer styles, and L. obtuse, though with a small point.*

26. **stellulata.** L. rough with branched or starry hairs. Root L. obovate. Stem L. oblong, very few. Pods 16–20-seeded, twice as long as stalk. **p.** *Very high.* Mountains of Carrara.

27. **longisiliqua.** Wallr Stem ascending. L. somewhat dentate, rough with branched hairs. Root L. oblongo-spatulate, attenuate. Pods erect, somewhat secund, eight times as long as stalk. Stigma obtuse, sessile. **p.** 4, 5. *Grassy shade among mns.* Sic. v y Allionii Gr.G

The following I cannot place:—

28. **pedemontana.** "Stems many, ascending, somewhat flexuose, scantily branched. Root L. on long stalks, somewhat cordate, reniform, obtusely 5-lobed. Lower Stem L. on stalks shorter than themselves, cordato-ovate, acutely 5–7-lobed; upper sessile, triangulari-lanceolate, attenuate at base, with 1 or 2 acuminate teeth on each side in the lower part. Pods somewhat spreading, quite smooth, flat, terminated by the somewhat thickened stigma. **p.** ? 8. *High mountains.* Between the upper valleys of the Po."—Boissier.

Neither the descriptions nor the arrangement of this genus are satisfactory. The broader or narrower margin of the seeds is an indefinite character, and perhaps not always constant. The most natural divisions seem to be—

A. Plant diffuse, without any rosette of root L. Rac. lax.

B. Root L. forming rosettes. Pan. lax, with spreading branches.

C. Root L. forming rosettes. Pan. erect.

These would be subdivided, first upon the petals, then upon the margin of the seeds, and lastly on the form of the base of the L. I have not materials to follow out this arrangement.

93. CARDAMINE. L

A. Seed-stalks filiform.

- **i.** All L. undivided. Sp. 1–3.
- **ii.** Root L. undivided. Stem L. tripartite, or pinnatifid. Sp. 4, 5.
- **iii.** All L. pinnate, or pinnatipartite.
  - **a.** Leaf-stalks with an auricle at the base. Sp. 6–8.
  - **b.** Leaf-stalks without an auricle. Sp. 9–15.

B. Seed-stalks compressed or winged. Sp. 14–17.

A. *Seed-stalks filiform. Flower, where not mentioned, white.*

i. *All L. undivided.*

1. **asarifolia** L L. cordato-orbiculate, sinuato-dentate, stalked, smooth. Stem ascending, leafy. Pods erect, twice as long as stalk. **p.** 6. *Mountain rills.* Pdm. Prov. Pistoja. ✓

2. **alpina.** Wild L. thick, smooth. Root L. rhombeo-ovate, entire, or obtuse, on long stalks. Stem L. few, entire, sometimes three-lobed, or with a single auricle, on short stalks. Stigma nearly sessile. **p.** 6, 7. *Very high.* Alps. Pyr. ✓

3. **hamulosa.** "Somewhat shrubby. L. obovate, on long stalks, entire, or acutely dentate; upper L.-stalks auriculato-sagittate. Stigma nearly sessile. **w.** 7. *Calcareous rocks.* Mountains of Carrara."—Bert.

ii. *Root L. entire. Stem L. ternate or pinnatifid.*

4. **resedifolia.** L L. not thick, smooth. Root L. ovate, on long stalks. Stem L. produced on each side into an acuminate auricle; lower ternate, upper pinnate. Pods erect, with a short point. **a. b.** or **p.** 6–8. *Moist shade, high.* Alps. ✓

5. **granulosa.** All Root scaly, with small axillary bulbs. Crown with dense fibres and runners. Root L. cordato-subrotund, on long stalks. Stem L. pinnate; uppermost nearly sessile. Stamens somewhat shorter than corolla. **p.** 4, 5. *Meadows.* Turin. *Much like* C. pratensis."—Bert.

iii. *All L. pinnate, or pinnatipartite.*

a. *Leaf-stalks with an auricle at the base.*

6. **impatiens** L Lts. of upper L. lanceolate, mostly incise. Auricles to L.-stalk long, linear, fringed. **a.** 5, 6. *Shady hills.* Ten ✓

7. **Chelidonia.** L. pinnate, nearly smooth. Lts. about five, stalked, ovate; lower pinnate. Auricles not fringed. *Fl. purple.* **p.** 6. *Shade.* Apen. Rome. Naples. ✓

8. **bicolor.** "L. pinnate, stipulate! Lts. elliptico-lanceolate, sessile. Sepals subrotund. **p.** *Moist meadows.* Bohemia."—DC. *from Presl.*

b. *Leaf-stalks without an auricle.*

9. **amara.** L Lts. of root L. subrotundo-ovate; of stem L. inciso-dentate. Style *long*, slender. Stem furrowed, rooting at base. *Anthers violet.* Pet. three times calyx. **p.** 5. *Brooks and wet woods.* ✓

β. *uliginosa*, Guss. Style short. Stigma somewhat capitate. Anthers white.

10. **latifolia.** Vahl L. pinnate. Lts. suborbicular, dentato-angular. Pods erect, acuminate with the style. **p.** 5–7. *Mountain rills.* Pyr. ✓

11. **hirsuta.** L Stem angular. Lts. of lower L. subrotundo-ovate, stalked; of upper oblong, nearly sessile, somewhat toothed. Pet. oblong, twice calyx. Pods erect. Width exceeding length of style; longer than stalk, even before the Pet. have fallen. **a.** 3–6. *Moist shade.* ✓

12. **sylvatica.** Zink Stem angular. Lts. of ✓

lower L. subrotundo-ovate, repando-dentate, mucronate; of upper oblong or linear, somewhat toothed. Pet. oblong, about twice as long as calyx. Pods nearly erect; width about equal to length of style; at first shorter than stalk. **a.** 5, 6. *Moist shade, occ.* Var. of Sp. 11?

✓ 13. **pratensis.** L Lts. of root L. subrotund, angular, or toothed; of stem L. linear or lanceolate, entire. Style very short. *Pet. obovate, three times calyx, generally lilac!* **p.** 4, 5. *Moist meadows.*

β. *dentata.* Ultimate Lt. cuneiform. Pet. twice calyx, *white.*

14. **Matthioli.** "Erect. Stems generally tufted. L. numerous, with many (*nine or ten pair*) Lts. Lts. of lower L. obovate; of upper lanceolate or linear. **p.** 3, 4. *Moist meadows.* n. It. *Very common.*"—BERT.

15. **parviflora.** All L. with sessile, oblong or linear, entire Lts.; lowermost distant from stem. Pet. oblongo-linear. Pods erect, on very spreading stalks. **a.** 6–8. *Marshy.* Fr. Siles. Holstein. Lucca. Pontine Marshes.

B. *Seed-stalks compressed or winged.*

16. **glauca.** L. pinnate, somewhat fleshy. Lts. 5–9, oblong; lateral nearly entire; terminal 3-lobed. Stem diffuse, much branched. Pods erect, hairless. Seed-stalks compressed, hardly winged. **p.** 6, 7. *Sandy, high.* Ætna. Calabria.

Portenschl

17. **maritima.** Stem much branched, diffuse. L. ternate and pinnate. Lts. ovate, trifid or pinnatifid, attenuate. Pods lanceolato-linear. Style linear, compressed. **b.** 5, 6. *Sandy shores.* Osero.

All

18. **thalictroides.** L. ternate and pinnate. Lts. ovate, 3-lobed. Stem weak. Pods spreading, linear. *Pet. yellowish at the base.* **b.** 5. *Mn. woods.* Dau. Pdm. Istr. n. It.

19. **trifolia.** L Stem nearly naked. Plant with creeping runners. L. ternate. Lts. rhombeo-subrotund, repando-crenate. **p.** 5, 6. *Moist mn. woods.* s. e. G. n. It.

94. DENTARIA. L

1. **enneaphyllos.** L L. three, verticillate, stalked, ternate. Lts. ovato-lanceolate, acuminate, unequally serrate. Stamens as long as Pet. **p.** 5, 6. *Barren woody hills.* s. e. G. Veronese. Urbino. Monte Gennajo. ✓

Waldst

2. **glandulosa.** L. three, verticillate, stalked, ternate. Lts. ovali-lanceolate, unequally serrate, with sharp acumen. Axils glanduliferous. Stamens half as long as Pet. **p.** 5. *Mn. woods.* Hultheim in Silesia.

Waldst

3. **trifolia.** L. 2–5, attenuate, stalked, ternate. Lts. obtusely and remotely serrate, with blunt acumen. **p.** 4, 5. *Shady valleys.* ✓ In the Devil's Hollow, by Cilli, in Lower Styria. In the wood Latemari, It. Tyrol. Picenum.

Lam

4. **digitata.** L. 3–4, attenuate, stalked, quinato-digitate; upper ternate. Lts. oblongo-lanceolate, unequally serrate, with a very sharp acumen. *Fl. pink.* **p.** 5, 6. *Woody hills.* Fr. Sw. S. G. n. It. ✓

Waldst

5. **polyphyllos.** L. 2–4, verticillate or alternate, stalked, pinnate. Lts. 7–9, approximate, lanceolate, serrate, with long acumen. *Fl. yellowish.* **p.** 4. *Beech woods.* Near Marschlins in the Grisons. Corni di Canzo. Apen. of Umbria. *Rare.* ✓

Lam

6. **pinnata.** L. 3–5, alternate, stalked, pinnate. Lts. lanceolate, acute, serrato-dentate. *Fl. white or lilac.* **p.** 5, 6. *Woody hills.* Fr. Ger. Sw. It. ✓

7. **bulbifera.** L L. many, alternate, pinnate; uppermost undivided, with axillary bulbs. **p.** 4–6. *Woody hills.* ✓

95. PTERONEURUM.

1. **græcum.** DC Lts. stalked, suborbicular, dentato-lobed, nearly equal. **a.** 3, 4. *Shady hills.* Sic. Cors. Cal. ✓

VII. CAPPARIDEÆ.

Sepals 4. Petals 4. Stamen numerous. Germen stalked. Placentas 2, lateral. Seeds numerous, without albumen. Embryo curved. *Shrubs with entire Leaves, and no true Stipules; but in some species there are stipulary Prickles.*

96. CAPPARIS. L

Sibth & Sm

✓ 1. **rupestris.** L Stalks 1-flowered, solitary. L. persistent, subrotund, fleshy. Spines 0. **S.** 5, 6. *Walls and rocks.* s. Eur.

v. of 2. Koch

2. **spinosa.** L Stalks 1-flowered, solitary. L. subrotund, retuse or very obtuse. Spines uncinate. **S.** 5, 6. *Walls and rocks.* s. Eur.

3. **ovata.** Desfontaines Stalks 1-flowered, solitary. L. ovate, acute. Spines uncinate. Berry pyriform. **S.** 4, 5. *Clayey hills.* Coasts of Sic. Botzen in Tyr.

VIII. CISTINEÆ. D.C

Sepals 3, convolute, with or without 2 detached exterior ones. Petals 5, crumpled, and convolute in the opposite direction. Stamens numerous. Germen and Style single.

97. CISTUS. L

A. *Sepals* 5 ; *the outer narrow, erect. Style cylindrical. Flowers more or less purple or pink.*

1. **incanus.** L L. spatulate, wrinkled ; haft 3-nerved ; upper narrower. Stalk 1-flowered. Cal. silky. **sS.** *Stony hills.* Languedoc. It.

β. villosus. L. broader, and passing more abruptly into haft.

✓ 2. **creticus.** L L. spatulato-ovate, tomentoso-hairy ; margin undulate ; upper L. acuminate. Haft nerved. Stalk short, 1-flowered. Sepals acuminate, villous. **sS.** 5, 6. *Dry hills.* s. Sic. Osero.

✓ 3. **albidus.** L L. sessile, oblong, somewhat 3-nerved, flat, incano-tomentose. Flowers 3–8, terminal, somewhat umbellate, *lilac.* **sS.** 4. *Dry hills.* mdt. Fr. Lig. Trapani ?

✓ 4. **crispus.** L L. oblongo-lanceolate, curled, 3-nerved, wrinkled, downy. Fl. 3–4, nearly sessile, umbellate, *lilac.* **sS.** 5, 6. *Dry hills.* mdt. Fr. It.

[illegible]

B. *Sepals* 5 ; *the outer broadest, acuminate. Stigma nearly sessile. Flower white, or yellowish.*

i. *Flower-stalks naked at base.*

✓ 5. **salvifolius.** L L. ovate, obtuse, wrinkled, tomentose beneath, not ciliate, stalked. Stalks hoary, 1–2-flowered, solitary, long, jointed. **sS.** 4, 5. *Dry hills.* s. Eur.

6. **corbariensis.** Pourr L. somewhat cordate, acuminate, ciliate, wrinkled, somewhat glutinous, stalked. Stalks long, 1–5-flowered. **sS.** Les Corbières.

7. **complicatus.** L. subrotundo-ovate, somewhat obtuse, white with down, folded, 3-nerved at base. Hafts preserving an even width. Corymb terminal, with about three Fl. on very short stalks. **sS.** 4, 5. I. of Lampedusa.

8. **monspeliensis.** L L. lineari-lanceolate, 3-nerved, villous on both sides, sessile. Fl. in a subsecund Cyme. Exterior Sepals ovato-lanceolate. **sS.** 4, 5. *Dry hills.* s. Eur. ✓

β. florentinus. L. not quite sessile. Stalks about 3-flowered. ✓

γ. affinis. Exterior Sepals cordate.

9. **hirsutus.** Lam L. oval or ovate, prolonged, hirsute, ciliate, sessile. Stalks 1–5-flowered. Caps. small, covered with the large, hirsute, pyramidate calyx. **sS.** Shore of Brest harbour, about four miles below Landerneau.

10. **Ledon.** Lam L. oblongo-lanceolate, nerved, smooth and shining above, villoso-sericeous beneath, sessile, connate. Fl. corymboso-cymose. Stalks and Cal. villoso-sericeous. **sS.** *Dry.* Prov. Lang.

ii. *Flower-stalks with small, coriaceous, deciduous Bracts at base.*

11. **longifolius.** Lam L. on short stalks, oblongo-lanceolate, downy and undulate on margin, veiny beneath. Fl. in cymes. **sS.** *Barren.* Donos and Fontfroide near Narbonne.

12. **populifolius.** L L. stalked, cordate, acuminate, serrate. Fl. in cymes. Bracts oblong. **sS.** At Fontlaurier in the Corbières. ✓

13. **cupanianus.** "L. ovate, acuminate, somewhat cordate at base, fringed on the margin, wrinkled and somewhat cottony on both sides ; on dilated, furrowed stalks. Stalks about 3-flowered, furnished in the upper part with a solitary, lanceolate bract. Sepals villous. **sS.** 5. *Open hills.* Palermo. Alcamo. Trapani."—Guss. *from Presl.*

C. *Sepals* 3.

14. **laurifolius.** L L. ovato-lanceolate, 3-nerved, smooth above, tomentose beneath. Stalks dilated at the base, connate. Caps. 5-celled, terminal. Fl. in umbels. **S.** 6, 7. *Dry hills.* s. Fr. ✓

15. **fastigiatus.** L. narrow linear, 3-nerved, smooth above, reticulate and hoary beneath, nearly sessile. Margin revolute. Umbels terminal, on long stalks. Sepals with adpressed bristles, acute. **sS.** 5, 6. Coasts of Sic. *Like Rosemary in general appearance.*

16. **ladaniferus.** L L. lanceolate, sessile, hairless above, tomentose beneath. Caps. 10-celled. Base of L. enlarging as they approach Fl. and passing into numerous decussate bracts. **S.** 6, 7. *Dry fields.* Between Cefalu and Messina. Prov.

98. HELIANTHEMUM. Tourn

A. Style straight, very short.

- **i.** Plant shrubby. Sepals 3 (except in *H. halimifolium*). Sp. 1–4.
- **ii.** Plant herbaceous. Sepals 5. Sp. 5–10.

B. Style straight, as long as, or longer than stamens.

- **i.** Shrubby. Sp. 11.
- **ii.** Annual. Sp. 12–14.

C. Style twisted at base in the Fl. L. more or less alternate. Stem woody.

- **i.** L. all alternate. No stipules. Sp. 15–17.
- **ii.** L. all alternate, stipulate. Sp. 18–20.
- **iii.** L. stipulate; lower opposite; upper alternate. Sp. 21–23.

D. Style twisted at base. All L. opposite. No stipules. Sp. 24–26.

E. Style twisted at base. Stem woody. L. opposite, stipulate.

- **i.** Fruit-stalk serpentine. Fruit pointing upwards. Sp. 27.
- **ii.** Fruit bent downwards.
  - **a.** Nerves of Cal. only 2. Sp. 28.
  - **b.** Nerves of Cal. 4. Sp. 29–44.

This last group seems hardly divisible. I attempted an analysis, but gave it up on finding how much it depended on the pubescence and on the colour of the flower—both very variable characters.

A. *Style straight, much shorter than Stamens.*

i. *Shrubby. Sepals* 3 (*except in* H. halimifolium).

1. **umbellatum.** DC Young branches downy, viscid. L. sessile, lineari-oblong, revolute, viscid, tomentose beneath. Stalks 1-flowered, racemoso-verticillate, the terminal umbellate. Cal. villous. **sS.** 5, 6. Fontainebleau. Le Mans. Orleans. Bordeaux?

2. **alyssoides.** Vent Stigma large, nearly sessile. Branches hoary at top, tomentoso-hirsute. L. sessile, oblongo-ovate, attenuate, somewhat obtuse, hirsute, slightly hoary when young, afterwards green. Stalks 1–2-flowered, terminal, axillary or umbellate, longer than L. Sepals acuminate, hirsute. **sS.** 5, 6. Landes. s. w. Fr.

β. *rugosum.* L. denticulate and somewhat curled.

3. **scabrosum.** Branches piloso-tomentose, rough, hoary. L. sessile, attenuate, oblongo-ovate, sub-acute, somewhat rough above, tomentoso-cinereous beneath. Stalks terminal, 1–2-flowered, shorter than L. Cal. hirsute. **sS.** Italy.—PERSOON.

4. **halimifolium.** Willd Plant glaucous, scaly. L. attenuate, somewhat stalked, oblong. Fl. somewhat panicled. Cal. with two exterior very narrow sepals. **S.** 5, 6. *Sandy sea-shore.* Sylva Sacra. Gaeta. Fondi, &c. Trapani. Cors.

ii. *Herbaceous. Sepals* 5.

5. **Tuberaria.** Miller Perennial. Stem ascending, nearly simple. Root L. oblong, 3-nerved, hoary, nervous beneath, furrowed above, tapering into stalk. Stem L. sessile, lanceolate, uppermost alternate. Stipules 0. **p.** 4, 5. *Sandy hills of coast.* Frejus. Cors. Otranto. Messina.

6. **Breweri.** Planchon Stem branched from base, somewhat diffuse. L. obovate. Flower-stalks bracteate, erecto-patent when in fruit. **a.** 6–8. Anglesea. *rare.*

7. **guttatum.** Mill Stem hirsute. L. oblong, opposite, sessile, 3-nerved, villous; uppermost alternate. *Stipules sometimes united to the L.* Rac. lax, without bracts. Fl.-stalks filiform. Outer Sepals half as long as interior, elliptic or ovate. **a.** 4–6. *Sandy.* Fr. It.

β. *plantagineum.* Larger Petals serrate, spotless.

8. **eriocaulon.** Dun "Stem di- trichotomous, very hirsute. L. oblongo-linear, hirsute, opposite; uppermost alternate, stipulate. Rac. simple, without bracts. Fl.-stalk long, filiform, hairy. Outer Sepals narrow. **a.** Fr.?"—DUNAL *in DC.* v. of 7 Gr & G

9. **punctatum.** Willd "Stem dichotomous, downy, somewhat grey. L. oblong, 3–5-nerved, green, rough with small starry hairs; lower opposite,

obtuse; upper alternate, stipulate, acute. Rac. long, grey, downy, few-flowered. **a.** Dax."—DC. v of 7 Gr + G.

10. **inconspicuum.** Pers Stem di-trichotomous, with few hairs. L. oblongo-linear, hirsute, opposite; upper alternate, stipulate. Rac. long, filiform. Fl.-stalks short, secund. Pet. oblongo-linear, shorter than calyx, hairy on one edge. **a.** ? Corsica. v. of 7. Gr + G.

B. *Style straight, as long as, or longer than Stamen. Sepals* 5.

i. *Shrubby.*

11. **lunulatum.** All Stem twisting, branched. L. oblong, attenuate, generally ciliate on the margin. Fl. solitary, or 2–4 in a sort of umbel on short stalks. Cal. of flower reflexed. *Pet. yellow, with a saffron, crescent-shaped spot.* **w.** 5, 6. w. Lig.

ii. *Annual.*

✓ 12. **ledifolium.** Willd ~~L.~~ Nearly smooth. Stem erect. L. oblong, somewhat denticulate, stalked, opposite; upper alternate, stipulate. Stalk solitary, opposite L., shorter than acuminate calyx. **a.** 4, 5. *Dry.* Mdt. Fr. ? Cal. Sic. Sard.

✓ β. *niloticum.* Pers Hirsute. Pet. shorter than calyx. Sic. Monte Gargano.

✓ 13. **salicifolium.** Pers Branches suberect, somewhat hirsute. L. obovato-oblong, acute, denticulate, green above, somewhat tomentose, stalked. Stip. lineari-oblong; upper half as long as L. Bracts ovate, acuminate, sessile, entire. Cal. and horizontal Stalks hirsute. Stalks exceeding L. Inner Sepals 3-nerved. **a.** 4, 5. *Barren.* Fr. Vall. It.

α. Upper Stipules half as long as L. Bracts entire.

β. *denticulatum,* DC. Bracts somewhat incise.

✓ γ. *intermedium,* DC. Upper Stip. not half as long as L. sp. Gr + G

✓ 14. **ægyptiacum.** L. linear, somewhat obtuse, pale grey beneath, stalked, opposite; upper alternate. Margin revolute. Stip. lineari-subulate. Cal. inflated, including Pet. Inner Sepals 4-nerved. Stalks filiform, cernuous in Bud and Fr. **a.** 4, 5. *Sandy hills.* Sic.

C. *Style twisted at base, usually opposite the L., of which the upper are alternate. Stem woody.*

i. *All L. alternate. No Stipules.*

15. **ericoides.** "Stem nearly erect. L. imbricate, semicylindrical, short. Rac. solitary, terminal. Stalks 1-flowered, pubescent, somewhat secund, bowed when in Fr. Caps. hairless. **w.** 4, 5. Sic."—Guss.

16. **Fumana.** Mill Stem crooked, diffuse. Lower branches procumbent. L. linear, hairy on margin, somewhat involute; lower short, crowded; upper scattered, and longer. Stalks solitary, 1-flowered, longer than L. Seeds falling out when the capsule opens. **w.** *Dry.* Gothland. Silesia. s. Eur. ✓

17. **procumbens.** Stem prostrate. L. linear, lax, with strigose hairs on margin and beneath. Flower-stalk shorter than L. Open capsules retaining the seed. **w.** *Sandy.* Frejus. Fontainebleau. *Probably a variety of* H. Fumana. v ? ✓

ii. *All L. alternate, stipulate.*

18. **arabicum.** Stem decumbent. Branches rod-like. L. lineari-oblong, hirsute, nearly sessile. Stalk 1-flowered, solitary. Cal. hirsute. Seeds reticulate, without hairs. **w.** 4, 5. *Dry hills.* Coast of Sic.

19. **Savii.** Stem ascending or erect. L. lanceolate, acute, flat, pubescent. Rac. lax. Cal. acuminate, hirsute. Seeds even, finely downy. **w.** 5. Pisa. Amalfi.—Bert. *Except under a very high power, the seeds appear quite smooth.*

20. **lævipes.** Pers Stem ascending. L. setaceous, glaucous, nearly hairless. Gemmæ leafy, axillary. Stip. long, filiform. Rac. long, secund, partial. Stalks bracteate at the base. Cal. hirsute. Seeds pitted. **w.** 4, 5. *Rough hills.* Prov. Nice. Sic. Capri. ✓

iii. *L. with Stipules; lower opposite; upper alternate.*

21. **sessiliflorum.** Hoary. Stem branched, erect. Lower L. opposite, lineari-lanceolate. Margin revolute. Stip. linear, ciliate. Fl. in secund spikes. Caps. villous. Seeds smooth. **sS.** 4, 5. Tarento. Sic.

22. **juniperinum.** Lag Stem ascending. L. lineari-subulate, *ciliate,* mucronate, somewhat revolute on margin, opposite; uppermost alternate. Stip. subulate; upper longest, not half as long as L. Rac. and Cal. villoso-glutinous. **w.** 4, 5. *Barren.* s. Fr. It. v of glutinosum Gr + G.

β. *viride.* Ten L. without hairs.

23. **thymifolium.** Pers Stem procumbent. Branches downy. L. nearly linear, very short, downy, opposite; uppermost alternate. Stip. mucronate, erect; upper more than half as long

as L. Rac. few-flowered, villoso-glutinous. **w.** 4, 5. *Barren.* s. Fr. It.

β. Barrelieri, DC. Erect.

γ. glutinosum, Pers. Branches villoso-glutinous.

D. *Style twisted at base. All L. opposite; no Stipules.*

24. **origanifolium.** Stem two or three times dichotomous. L. stalked, ovate, hairy on both sides. Rac. short. Pet. hardly exceeding calyx. **w.** Mtp. Alais.

Canum Dum DC

25. **marifolium.** Stem procumbent, irregularly branched. L. ovate or oblong, flat, covered beneath with a close white stellate pubescence; *upper surface nearly hairless.* **w.** 5, 6. *Open hills, widely scattered.*

β. vineale, DC. L. strigose above. 5, 6. s. Eur.

Dun.

γ. canum, DC. L. hairy above.

Linnæus describes H. canum *as having terminal, sessile umbels, which does not at all suit our plant.*

~~italicum~~ C & G Wahlenberg

26. **oelandicum.** Stem procumbent, irregularly branched. L. ovate or oblong, not covered with a dense short pubescence beneath. *L. nearly hairless, or only ciliate.* **w.** 6–8. *Open hills.*

β. alpestre. L. strigose. Rac. short, about 3-flowered. Alps.

γ. italicum. L. strigose. Rac. long, about 7-flowered. s. Eur.

Between italicum *and* penicillatum *I can find no difference. In all this section the longer hairs are strigose, simple, in pairs, and in brushes.* Alpestre *has usually L. green on the under side; but sometimes this part is covered with long white silky hairs.*

E. *Style twisted at base. Stem woody. L. opposite, stipulate.*

i. *Stalks of Fruit serpentine, the Fruit turned upwards.*

27. **rubellum.** Stem procumbent. Branches erect or ascending. L. stalked, ovate; lower subrotund, white, with short, dense, stellate pubescence beneath; the upper stipulate. Rac. opposite or in threes, panicled. **w.** 4, 5. *Rough calc. hills.* Sic.

The small flower and ascending fruit give to this the habit of the preceding division. DC. and Bertoloni place it with the exstipulatæ; *but both mention stipules.*

ii. *Fruit bent downwards.*

a. *Nerves of inner Sepals 2.*

28. **lavandulifolium.** DC Stem erect. L. oblongo-linear, hoary beneath. Margin revolute. Stip. and bracts linear, acute, ciliate. Rac. terminal. Fl. crowded. Sepals ciliate; outer minute, reflexed after flowering. **sS.** 6, 7. *Dry calc. hills.* Mars. Cors.

b. *Nerves of inner Sepals 4.*

29. **stœchadifolium.** Bert "St. erect. Branches tomentoso-canescent. L. oblongo-linear, somewhat blunt, somewhat tomentose on both sides, greenish above, hoary beneath. Margin revolute. Stip. somewhat villous, lineari-lanceolate. Rac. revolute before flowering. Fl. crowded. Cal. villous. Exterior Sepals ciliate, greenish; interior acuminate, hoary. **sS.** Cors."—DC. v cf. 28 Gro

30. **berterianum.** Stem with pencils of soft hairs. L. oblongo-lanceolate or linear, green on both sides, and with a few stellate hairs. Stalk about as long as Cal. *Fl. pink.* **w.** 6, 7. *Banks* of Tanaro at Alba in Pdm. —Bert. *Said to resemble* obscurum, *of which it appears to be a pink-flowered variety.*

Pers.

31. **obscurum.** Stem ascending. Branches numerous, hirsute. L. hirsute on both sides, not hoary; upper elliptic. Stip. ciliato-hirsute, exceeding L.-stalk. Rac. long. Cal. hirsute. **w.** 7, 8. *Woods.* s. and m. Eur. *Includes* grandiflorum, *and, with it, is considered a variety of* vulgare *by Koch and Bert.* v. of 37.

32. **nummularium.** Mill Branches procumbent, hirsute. Lower L. round; upper lineari-oblong, hirsute, with a greenish stellate pubescence beneath. Stip. lineari-oblong, twice as long as L.-stalk. Rac. and Cal. hirsute. **w.** s. Fr. It.—DC. v of 37. Grr G

Pers

33. **acuminatum.** Branches erect, hairy at the extremities, not in the middle. L. on long stalks, oblong, green, but with a dense stellate pubescence beneath. Margin revolute. Stip. nearly smooth, linear, exceeding L.-stalk. Rac. hairy, lax, few-flowered. Three nerves of the interior Sepals hairless, shining, transparent. **w.** 5. Nice. v of. 37. Grr G

34. **semiglabrum.** Lower part of plant hairy; upper without hairs. Stem much branched. L. lanceolato-linear or oblong, paler beneath, with a stellate pubescence. Margin revolute. Rac. simple. Stalks longer than bracts. Cal. quite smooth. *Fl. pink.* **w.** 5, 6. Noli and Albengi in w. Liguria. — Bert. *Seems, from the description, to be a pink-flowered variety of* H. acuminatum.

Dun

35. **tomentosum.** Branches long, ascending, somewhat hoary. L. oblongo-lanceolate. Margin generally revolute, incano-tomentose beneath, green and nearly hairless above. Ribs of Cal. elevated, hairy. Bracts smooth. **w.** 7. France. v of 37

Pers

✓ 36. **hirtum.** Branches numerous, ascending, grey with down. L. oblong, hoary beneath with dense stellate hairs, greenish grey above. Margin revolute. Stip. narrow, hardly exceeding L.-stalk. Cal. with long hairs on all the nerves and an intermediate stellate pubescence. **w.** 5, 6. *Dry hills.* s. Fr.

β. *majoranifolium.* Fl. white.

Gart

✓ 37. **vulgare.** Procumbent. L. ellipticooblong, white beneath with a dense stellate pubescence; lower subrotund. Margin hardly revolute. Stip. oblongo-linear, ciliate, exceeding L.-stalk. Rac. lax. Sepals without long hairs on the inner nerve (except quite at the base), and with an intermediate stellate pubescence. **w.** 6–8. *Dry pastures.*

β. *surrejanus.* Pet. lanceolate.

38. **arcuatum.** "Procumbent. L. nearly round, hoary beneath with a dense stellate pubescence; green and nearly smooth above, ciliate; upper oblongo-lanceolate. Stip. ciliate. Cal. green, oval when in Fr. Inner Sepals acuminate. **p.** 4, 5. *Calc. rocks.* Madonie. Calab.?"—Guss.

Dun

39. **hispidum.** Branches ascending, tomentose. L. stalked, oblong, somewhat mucronate; hoary beneath, green and rough above. Margin revolute. Cal. hirsute. *Pet. white.* **w.** s. Fr.—DC. v of 36 Gr r G

DC

40. **roseum.** Stem decumbent, covered with grey dust, and, especially in the upper part, with small stellate hairs. Lower L. ovate; upper oblong. Stalks longer than calyx. *Fl. deep pink.* **w.** 5, 6. *Dry hills.* w. Lig. Pyr.

41. **croceum.** "Hoary with stellate hairs. Stem decumbent. Lower L. subrotund or elliptic; upper oblong. Stip. short. Sepals somewhat acute. **w.** 5, 7. *Calc. hills.* It. *Differs chiefly from* vulgare *by its covering of stellate hairs, its few-flowered raceme, and abruptly acute sepals.*"—Bert.

D.C

42. **pulverulentum.** Prostrate. Branches numerous, hoary. L. oblongo-linear, obtuse, hoary beneath, glaucous above. Stip. subulate, exceeding stalk. Cal. hairy on nerves with fine stellate down between them. **w.** 6, 7. *Barren hills.* Somersetshire. m. and s. Eur. ✓

D.C

[I prefer this name to *polifolium*, because Linnæus describes the latter *Calycibus lævibus*, as opposed to *Calycibus hispidis* of the neighbouring species.]

Pers

43. **pilosum.** Stem twisted at base. Branches slender, erect, "rarely a little ascending towards the base." L. small, very narrow and closely revolute on margin. Cal. and Caps. small. **w.** Narb. Prov.—Jordan. ✓

[I do not mark this as a quotation, because I do not know if I have extracted from his detailed description the characters on which Mr. Jordan would depend. He distinguishes also,

apenninum, with flat, oval, oblong L. Sepals downy.

polifolium, with flat, oval, oblong L. Sepals shining. This he adopts from DC. without being acquainted with the plant.

pulverulentum, with oblong or linear L., somewhat revolute on the margin. Branches spreading.

velutinum. L. oblong or linear-oblong, at last flat. Branches erect.

—All of which seem to me to belong to *H. pulverulentum.*]

44. **morisianum.** Covered everywhere with stellate hairs. Stem much branched. L. short, oblongo-lanceolate, tomentose beneath. Margin revolute. Nerves of Cal. ciliate. *Fl. pink.* **w.** 5, 6. *Mns.* Arcidano in Sard.—Bert.

Pers

45. **Thibaudi.** "Tomentose. L. linear. Margin revolute. Fl. cernuous, fringed with glands. Sepals oblique, somewhat three-edged; outer lanceolate, reflexed. *Sepals resembling the elytra of an insect.* **w.** Corsica."—Pers. from Herbarium of Thibaud. *This seems a remarkable plant, but it is not noticed by DC., Duby, or Bert. Is it possible that Persoon took for sepals the open valves of the capsule?*

IX. VIOLARIÆ. D·C

Calyx of 5 Sepals. Corolla of 5 Petals, the lower with a spur. Summit of the Anthers prolonged into a dry membrane. Germen 1. Style 1.

99. VIOLA. L

I follow Koch in this genus, because, though fully persuaded that the species are not all sound, yet I could not determine with confidence what ought to be rejected. I have added what was necessary from other authors in the words of the author, giving to the reader all the knowledge I have been able to attain on the subject. The shape of the L. is of those of summer; of the Stipules, those of the middle of the stem.

A. Style nearly straight. (Stigma with a perforate Beak, DC.)

i. Stemless. Fruit-stalks erect. Caps. nodding. Sp. 1–4.

ii. Stemless. Fruit-stalks lying down. Sp. 5–11.

iii. With a stem. Fruit-stalks erect.

a. Primary shoot short and barren. Flowering stems lateral, from among the L. Sp. 12–14.

b. Primary shoot lengthened and bearing flowers. Sp. 15.

B. Style sharply bent. Stigma flat (with an opening between its two lobes, DC.). Sp. 24.

C. Style ascending. Stigma large, urceolate, with a beard on each side.

i. L. quite entire. Sp. 25–27.

ii. L. crenate. Sp. 28–35.

A. *Style nearly straight.*

i. *No Stem. Stalks erect. Caps. nodding.*

✓ 1. **pinnata.** L Root somewhat woody (not fleshy). L. multipartite; outline nearly round. Stigma somewhat three-edged. **p.** 6, 7. *Mountain pastures.* Alps. *rare.*

✓ 2. **palustris.** L Root scaly. All L. reniform (broader than long). Stip. free, ovate, acuminate. Middle Pet. with violet veins. **p.** 5, 6. *Bogs.*

3. **epipsila.** Ledeb Lower L. reniform; second cordate. Stip. free, ovate, acuminate. Pet. not veiny. **p.** 5. *Bogs and woods.* Salzburg. Laybach. *Intermediate in appearance between* palustris *and* hirta.

4. **uliginosa.** Schrad L. cordate. Stalk winged. Stip. lanceolate, glanduloso-denticulate, attached for above half their length to the L.-stalk. **p.** 3, 4. *Bogs.* Carn. Sil. Leipzig.

ii. *No Stem. Fruit-stalk lying on the ground.*

5. **sciaphila.** Koch No runners. L. cordate, with a shallow, open sinus. Stip. lanceolate, fringed. Caps. oblongo-oval, quite smooth. **p.** 4, 5. *Shady hills.* Sw. Tyr.

6. **ambigua.** Waldst No runners. L. cordate, with a shallow, open sinus. Stip. lanceolate, fringed. Caps. ovate, downy. **p.** 4, 5. *Pastures.* Vallais.

7. **collina.** Besser Runners short, or wanting. L. cordate, with a deep sinus. Stip. lanceolate. Fringe hispid. Caps. globose, downy. **p.** 4, 5. *Shade.* Ratisbon and along foot of Alps.

8. **hirta.** L Runners short, or wanting. L. cordate, prolonged, with a deep sinus. Stip. lanceolate. Fringe smooth. Caps. globose, downy. **p.** 4, 5. *Pastures and shade. Distinguished from* V. odorata *by the general want of runners, which, when they occur, flower within the year, the longer L., the position of the Bracts,* decidedly *below middle of Stalk, the want of smell, the smaller Caps. and fewer Seeds; and, according to* Bab., *by the linear Spurs to the Anthers.* ✓

9. **odorata.** L Runners long (not flowering till the year after their production, Godr.). L. cordate, with a deep sinus. Stip. ovato-lanceolate, acute. Fringe much narrower than half the width of stipules. Caps. globose, downy. (Spur of Anthers lanceolate, Bert.) **p.** 3, 4. *Woods and banks.* ✓

10. **suavis.** M.B Runners long. L. cordate, with a deep sinus. Stip. lanceolate, cuspidate. Fringe downy, more than half the width of stipules. Caps. globose, downy. **p.** 3, 4. *Banks* of the Viadre at Frankfort-on-Oder. ✓

11. **alba.** Besser (Runners bearing flowers the year of their production, Godr.) L. triangulari-cordate, abruptly acuminate, with a deep but open sinus. **p.** 3. *Calcareous woods.* Nancy. ✓

iii. *Plants with a Stem. Fruit-stalks erect.*

a. *Primary shoots barren. Flowering Stems lateral, from among leaves.*

✓ 12. **mirabilis.** L. Petaliferous Fl. from near the root; fructiferous from stem only. Stem erect, with a line of hairs. L. reniformi-cordate, somewhat acuminate. Three Sepals, very large, acuminate. Spur long, cylindrical. **p.** 4, 5. *Calc. woods.* Lorr. *common.* Dau. Pdm.

✓ 13. **arenaria.** D.C Decumbent. L. cordate, obtuse. Stip. ovato-oblong, fimbriato-serrate, many times shorter than L.-stalk. Caps. ovate, somewhat acute. **p.** 5, 6. *Sandy fields and pine woods.* Rhine. Vall.

✓ 14. **sylvatica.** Fries Ascending. L. ovali-cordate or subreniform; lower obtuse; upper somewhat acuminate. Stip. lineari-lanceolate, fringed, ciliate. Cilia as long as the width of the stipule. Caps. smooth, acute. **p.** 3, 4. *Woods and hedges.*—Godron.

✓ *β. riviniana*, Rchb. Flowers larger. Spur whitish.

b. *Primary shoots lengthened and bearing flowers.*

✓ 15. **canina.** L. Decumbent. L. oblongo-cordate, somewhat acute. Stip. oblongo-lanceolate, fimbriato-serrate, many times shorter than L.-stalk. Caps. truncato-obtuse, apiculate, smooth. **p.** 5, 6. *Woods, thickets, and heaths.*

16. **Allionii.** "Small, hairy. Stems decumbent. L. cordato-subrotund, minutely crenate. Stip. remotely serrate. Sepals lanceolate, acute. Caps. ellipsoid, very obtusely keeled. **p.** 6. It. Alps."—Bert. *According to Bert., the valves of the Caps. in* V. canina *are acutely keeled. I do not find them so.*

✓ 17. **lactea.** Sm "L. ovato-lanceolate, rounded below and narrowed into the L.-stalk. Lowermost cordate. Stip. lineari-lanceolate, inciso-serrate, shorter than L.-stalk. Caps. oblong, acute, hairless. *Fl. pale blue.* **p.** 5, 6. *Sandy heaths.*"—Bab. T. Wells and Heathfield. n. and w. Fr.

18. **Schultzii.** Billot Erect, smooth. L. cordate, somewhat acuminate. Stalk winged at the top. Stip. oblongo-lanceolate, deeply toothed. Sepals acute. Spur two or three times as long as appendages to calyx, acute, curved upwards, forked. *Fl. at first yellowish, afterwards quite white.* **p.** 4, 5. *Boggy meadows.* Als. Laybach.

✓ 19. **stagnina.** Kit Erect, smooth. L. oblongo-lanceolate, on a cordate base. Stalk winged at the top. Stip. lanceolate, acuminate, fimbriato-serrate, about half as long as L.-stalk. Sepals acute. Spur about equalling appendages to calyx. **p.** 5, 6. *Wet.* G. c. Fr.

✓ 20. **stricta.** Hornman Erect, smooth. L. cordate, somewhat acuminate. Stalk winged in the upper part. Stip. oblongo-lanceolate, about half as long as stalk; upper equalling L.-stalk. Sepals acute. Spur obtuse, somewhat longer than appendage. **p.** 5, 6. *Open woods.* n. e. G. *Koch depends a good deal on the winged leaf-stalk; but, in all this section the leaf-stalk is winged at the top, and more in the upper than in the lower L.* V. stricta *is said to have nearly the L. of* canina, *and the large Stipules of* stagnina.

✓ 21. **pratensis.** Mertens Erect, smooth. L. lanceolate, on an ovate base, attenuate into a winged stalk. Stip. leafy, oblongo-lanceolate, inciso-dentate, longer than L.-stalk. Spur about equalling appendage of calyx. **p.** 5, 6. *Meadows, rarely in woods.* G. *occ.*

✓ 22. **elatior.** Fries Erect, downy. L. lanceolate, on a somewhat cordate base. Stalk winged. Stip. leafy, oblongo-lanceolate, inciso-dentate, longer than L.-stalk. **p.** 5–7. *Woods and moist meadows.* G.

23. **arborescens.** L. Stem woody! L. lanceolate. Stip. adhering. No Bracts. Valves of Caps. boat-like, obtuse. Seeds few, ovate. **w.** 2. *Rocks and sandy shores.* Narbonne.

B. *Style sharply bent. No Beak to Stigma. A Pore between the lobes of Stigma.*

✓ 24. **biflora.** L. Stem with about two L. and two Fl. L. reniform, crenate. Stip. ovate, quite entire. **p.** 5–8. *Moist woody hills.* Alps. Sil. Fr.

C. *Style ascending. Stigma large, bladder-like, with beard on each side.*

i. *L. quite entire.*

25. **nummulariifolia.** All L. subrotund, shorter than stalk. Stip. lanceolate, undivided, remotely serrate. Sepals oblongo-lanceolate, acute. Spur very short and blunt. **p.** 7. e. Alps. Cors.

26. **comollia.** Massara L. elliptico-subrotund, somewhat cordate at base, somewhat repand. Stip. linear, quite entire. Sepals fringed. Spur very short and blunt. **p.** 7. *Mns.* Valtelline.

✓ 27. **cenisia.** L. Lower L. ovate; upper generally oblong. Stip. entire and palmate; segments spatulate. Spur as long as sepals. *Shoots filiform, creeping.* **p.** 7, 8. *Very high.* s. Alps.

ii. *L. crenate.*

28. **alpina.** Jacq "Stemless. L. tufted, subrotundo-cordate. Stip. oblong, attached beyond the middle, cloven at top. **p.** 7, 8. *Very high.* e. Alps.

✓ 29. **cornuta.** L "R. fibrous. Stem ascending. L. cordate, ciliate. Stip. obliquely cordate, inciso-dentate, ciliate. Sepals subulate. Spur subulate, longer than calyx. **p.** 6, 7. *High.* Pyr."—DC.

✓ 30. **calcarata.** L Runners filiform, creeping. Stems simple. L. ovate; upper narrower. Stip. entire, trifido-dentate, or somewhat pinnatifid. Sepals oblong, glanduloso-denticulate. Spur subulate, as long as petals. **p.** 7, 8. *Mountain pastures.* Alps.

β. Zoysii. Fl. yellow.

31. **tricolor.** L L. crenate; lower cordate. Stip. lyrato-pinnatifid; the middle division crenate. Spur about twice as long as appendages of calyx. Root simple. Stems branched. **a.** 5–9. *Fields.*

β. saxatilis, Schm. Fl. all yellow.

γ. bannatica, Kit. Most of the L. cordate.

✓ *δ. arvensis.* Cor. pale, not exceeding calyx.

✓ 32. **rothomagensis.** Desf Lower L. cordate. Stip. lyrato-pinnatifid; the middle division broader and quite entire. Spur about twice as long as appendages to calyx. Root simple. Stems much branched. **b.** (or **a.**) 5–9. *Chalky rocks* of St. Adrien, near Rouen. Spa.

33. **prostrata.** "Root nearly simple. Stems decumbent. Lower L. subrotund; upper ovate; all somewhat cordate, and coarsely toothed. Teeth cartilaginous. Stip. pinnatifid; the middle division oblong, entire. Spur very short and blunt. **p.** Apen."—DC.

34. **lutea.** Sm Lower L. cordate; upper lanceolate. Stip. digitato-multipartite; divisions linear; the middle one broadest. Spur hardly exceeding appendages of calyx. Shoots creeping, filiform. Stems nearly simple. **p.** 5, 6. *Hills and mountains.* ✓

35. **heterophylla.** Bert Lower L. ovate or oblong; upper lineari-lanceolate. Stip. digitato-multipartite; the middle division hardly broader. Spur exceeding appendages of calyx. Shoots creeping. Stem simple. **p.** 7, 8. *Rocks.* Lig. Corni di Canzo. Aus. Alps.

Jordan ("Annales de la Soc. Linn. de Lyon") has proposed several other species of this section; but as he gives no specific characters, it is difficult to tell on what he rests in determining species. He arranges them in three groups. The plants of the first are strictly annual, and their stems nearly solitary. In the second, many stems arise from the crown of the root. Flowers are usually produced in the first year, and the plant lives two or three. In the third group they are strictly perennial. The author promises further elucidations.

X. RESEDACEÆ.

Sepals 4–6. Petals 4–6, unequal; some of them divided or laciniate, not spurred. Stamens 10–24. Filaments variously united, inserted on a disk, which is prolonged above into a nectariferous Scale. Germen 3–6-lobed, each lobe terminated by a Style. Seeds many, on three longitudinal, parietal Placentas.

100. RESEDA. L

asterocarpus Clusii. Gay.

A. *Leaves all undivided.*

1. **purpurascens.** L "Stigmas 5. L. linear. In Collibus Salmanticis, Monsp."—Linn.

2. **crispata.** Sepals 4. Stigmas 3. L. lanceolato-linear, repando-undulate, with a subrotund gland on each side of the base. Upper Pet. three times as long as calyx. **a. b.** 5, 6. Bocca di Falco in Sic.—Bert.

3. **glauca.** L Sepals 5. Stigmas 2. L. linear, with an acute, stipule-like tooth on each side of the base. **p.** 6, 7. *Open stony.* e. Pyr. Mte. Lupo. ✓

4. **Luteola.** L Sepals 4. Stigmas 3 or 4. L. lanceolato-linear, with a subulate tooth on each side of the base. ✓

B. *Lower L. undivided; upper divided.*

5. **gracilis.** Sepals 6. Upper L. trifido- ✓

subbipinnate. Segments very narrow, mucronulate. Caps. deeply 3-horned. **a.** 5, 6. Lucania. Cal.

✓ 6. **lutea.** L Sepals 6. Upper L. trifido-bipinnatifid. Horns of Caps. very short. **b.** 6–8. β Jacquini

✓ 7. **Phyteuma.** L Sepals 6. Upper L. simply trifid. Styles 3. **a.** 6–8. *Fields.* s. Eur.

C. *All L. pinnatifid.*

8. **suffruticulosa.** L Sepals 5, rarely 6. Caps. with four short horns. **p.** or somewhat shrubby. 5–8. *Sandy shores* of Mdt. *Escapes* in E. and n. Fr. ✓

101. ASTROCARPUS. Neck

1. **sesamoides.** Cay L. undivided, linear or lanceolate. **p.** 5, 6. s. w. Fr. Lig. Sard. Cors. ✓

Odorata
Pedicl longer than cal. stamens not dilated below anth.. div of cor. about not linear. capsule shorter
France

XI. DROSERACEÆ. D.C

Sepals 5, imbricate in the bud. Corolla regular, of 5 Petals. Anthers terminal. Styles 3–5. Germen of 1 or 3 cells. Seeds parietal. Embryo straight, in a fleshy albumen. Young L. rolled up.

102. DROSERA. L

✓ 1. **rotundifolia.** L L. circular, shorter than their hairy stalks. Scape erect, three times as long as L. (Seeds taper, narrow, with fine longitudinal stripes, Godron.) (Coat of seeds chaffy, Bab.) **p.** 7, 8. *Bogs.* m. and n. Eur.

✓ 2. **longifolia.** L L. obovate, longer than their hairless stalks. Scape ascending, hardly exceeding L. (Seeds ovoid, oblong, somewhat wrinkled, Godron.) (Coat of seeds rough, not chaffy, Bab.) **p.** 7, 8. *Bogs.* m. and n. Eur.

✓ 3. **anglica.** Huds L. oblongo-cuneate, as long as their hairless stalks. Scape erect, twice as long as L. (Seeds oblong, ovoid, somewhat rugose, Godron.) (Seeds with a loose chaffy coat, Bab.) **p.** 7, 8. *Bogs.* m. and n. Eur. *occ.*

– β. *obovata,* M. and K. L. obovate. ✓
op. Gr. C

103. ALDROVANDA. Monti

1. **vesiculosa.** L L. verticillate, almost bladdery. Stalks ending in six bristles. **p.** or **a.** ? 8. *Still water.* Arles. It. *occ.*

104. PARNASSIA. L

1. **palustris.** L L. cordate. Bristles of each nectary numerous. **p.** 7, 8. *Bogs and moist sand. Not in Sic.* ✓

XII. POLYGALEÆ. Juss

Sepals 5, the two inner much larger and petal-like, forming two wings. Petals 3 or 4, more or less united with the tube of the stamens. Filaments united at base, free, or divided into two sets upwards. Anthers 1-celled, opening by a pore at the top.

105. POLYGALA. L

A. *Filaments united almost to summit in two sets. Crest of Corolla many-cleft.*

rupestris Pourr **i.** *Wings 1-nerved.*

1. **saxatilis.** Desf L. oblongo-lanceolate, mucronate. Rac. lateral, 2–6-flowered. Wings elliptic. **p.** 6. *Rocky thickets.* Narb. Mars.

2. **exilis.** D.C Erect, much branched. L. linear, somewhat fleshy. Rac. lax, terminal. Wings oval, obtuse. **a.** 7, 8. *Sandy bed of* Durance. Castellone.

ii. *Wings 3-nerved. Nerves not anastomosing.*

3. **monspeliaca.** L Stem erect, nearly simple. L. lineari-lanceolate. Wings elliptic, covering the Caps., which is twice as long as broad. **a.** 4, 5. *Barren.* Coasts of Mdt. ✓

4. **amara.** Jacq Much branched. L. obovate, forming rosettes at end of shoots. Wings much narrower than Caps., which is about as long as broad. **p.** 6–8. *Calc. hills and moist meadows. occ. Fl. much smaller than those of* P. vulgaris.

"β. *amblyptera.* Wing almost as broad as capsule."—Koch.

"γ. *alpestris.* Dwarf. Even the uppermost L. elliptic."—Koch.

Sp. Gr G "δ. *austriaca.* Cran "Fl. very small. Wings often shorter than capsule."—Koch.

"ε. *uliginosa.* Fl. small. Caps. forming an angle at the base."—Godron.

iii. *Wings 3-nerved. Nerves with arched anastomosing veins.*

5. **Preslii.** "Quite smooth. Stems ascending. L. somewhat serrulate; lowest obovate; upper elliptic, attenuate. Rac. terminal. Wings elliptic, acute at each end, shorter than corolla, longer than nearly sessile capsule. **p.** 4–6. *Open meadows.* Everywhere in Sic. *Pet. and Bracts pink. Wings green or whitish.*"—Guss.

6. **calcarea.** Sch Shoots long, ending in rosettes supporting the flowering branches and many-flowered terminal raceme. L. obovate. Lateral Bracts shorter than flower-stalk. Germen in the Fl. as long as its stalk. **p.** 4–6. *Calc. hills.* Fr. Zweibrücken.

7. **vulgaris.** L No rosettes. L. lanceolate, the lower elliptic. Rac. terminal. Lateral Bracts about half as long as flower-stalk. Germen in the Fl. about as long as its stalk. **p.** 5, 6. *Dry pastures.*

β. *oxyptera.* Wings acute, narrower than capsule.

γ. *alpestris.* Dwarf. Rac. short and dense.

8. **depressa.** Wend L. lanceolate; lower elliptic, obtuse, opposite. Rac. 5–8-flowered, at first terminal, but a lateral branch from the upper L. often at last overtops it. Lateral bracts half as long as flower-stalk. **p.** 5, 6. *Boggy meadows.* Fr. Rhine. Holstein.

9. **comosa.** Schk L. lineari-lanceolate; lowest elliptic. Rac. terminal, many-flowered. Lateral bracts as long as flower-stalk. Wings elliptic. Germen in the flower about as long as its stalk. **p.** 5, 6. *Dry pastures. occ.*

10. **nicæensis.** Risso L. lanceolate; lower elliptic. Rac. terminal, many-flowered. Lateral bracts as long as flower-stalk. Wings ovato-subrotund. Germen in flower about as long as its stalk. **p.** 5, 6. *Grassy hills.* Nice. Trieste. v 85-15. Gr G.

11. **major.** Jacq L. lineari-lanceolate. Rac. terminal, many-flowered. Wings elliptic. Stalk three or four times as long as germen. **p.** 5, 6. *Dry pastures.* lower Aus. It.

iv. *Wings 5-nerved and full of veins.*

12. **flavescens.** Stem ascending. L. lineari-lanceolate. Rac. terminal, many-flowered. Wings elliptic, exceeding corolla. Germen nearly sessile. **p.** 5–8. *Barren.* Rome. Nap. *Fl. yellowish or dingy purple.*

13. **rosea.** Desf "Stem erect. Lower L. obovate; upper lanceolate. Rac. terminal. Wings ovato-subrotund, many-nerved, somewhat shorter than corolla. Germen nearly sessile. **p.** 5–7. *Open hills.* Cape Pelorus."—Guss. *from Presl.*

B. *Filaments free except at base.*

14. **Chamæbuxus.** L Lower Sepals concave, with an internal gland. L. oblong, mucronate. Rac. 1–2-flowered. *Yellow.* **w.** 4–6. *Woody mountains.* m. Eur.

XIII. FRANKENIACEÆ. St Hill

Sepals 4 or 5, connected at base into a furrowed tube. Petals with a scale at the summit of the claw. Capsules of one cell. Placentas parietal.

106. FRANKENIA. L

1. **pulverulenta.** L L. obovate, retuse, smooth, pulverulent beneath. Stalk ciliate. R. slender. **a.** 7. *Sandy shores.* Mdt.

2. **lævis.** L L. linear, revolute, crowded, ciliate at base. Stem prostrate, hairless. Fl. solitary. Cal. smooth. **p. w.** 7. *Sea-shore. Not in G.*

3. **intermedia.** D.C L. thick, linear, revolute, ciliate at base. Stem prostrate, velvety. Fl. crowded. Cal. hispid. **p. w.** 5, 6. *Shores.* Mdt.

XIV. CARYOPHYLLACEÆ.

Sepals 5, separate or partially united, imbricate, equal. Petals 5, equal, alternate with the sepals. Stamens 5 or 10; occasionally, by abortion, fewer. Stigmas 2–5, sessile on top of Fruit, which, in most cases, splits at top into as many, or twice as many, points as there are stigmas. Placenta central. Embryo curved.

The Tribes are:—

1. SILENEÆ.—Embryo curved round a fleshy albumen. Sepals united into a tube . . . . Gen. 107–113.
2. ALSINEÆ.—Embryo as in Tribe I. Sepals all separate . . . Gen. 114–126.
3. ELATINEÆ.—No Albumen . . . . Gen. 127.

Tribe I. *SILENEÆ.*

107. GYPSOPHILA. L

A. *Calyx without scales at the base.*

✓ 1. **repens** L Fl. in a lax corymb. Stem decumbent, smooth. L. lineari-lanceolate. Teeth of Cal. obtuse. Stamens shorter than petals. **p.** 6–8. *Stony.* Alps. Pyr.

✓ 2. **fastigiata.** L Fl. in a dense corymb. Stem ascending; upper part glutinoso-pubescent. L. lineari-lanceolate. Teeth of Cal. erect, very obtuse. Stamens exceeding petals. **p.** 6–8. Montp.? e. G. Grisons. *very rare.*

3. **illyrica.** Fl. in a corymb. Stem ascending, glanduloso-pubescent. L. linear. Teeth of Cal. ovate, acuminate. **w.** 5–9. Palermo.

4. **acutifolia** L Fl. in a lax, dichotomous panicle. Stem much branched from base. L. lanceolate, somewhat 3-nerved, very acute. Cal. campanulate; teeth oblong, acuminate, recurved at top. Stamens shorter than petals. **p.** 7, 8. *Sandy fields.* lower Austria.

5. **cretica.** Fl. in a lax, somewhat dichotomous panicle. Stem ascending, pubescent. Lamina of Pet. lanceolate, *without spots.* L. lineari-subulate, somewhat 3-nerved. Cal. with three striæ at each angle; teeth acuminato-aristulate. **p.** 5, 6. *Dry hills.* Palermo. Polizzi on the skirts of the Madonie.

6. **Arrostii.** Fl. *small,* in a lax, dichotomous panicle. Stem much branched, quite smooth, and terete. L. lineari-lanceolate. Teeth of Cal. oblong, obtuse, rough with points. **p.** 6–8. *Gypsaceous hills.* Sic. Cal.

7. **paniculata** L Fl. in a lax, dichotomous, hairless panicle. Stem much branched from base, hairy in the lower part. L. lanceolate, somewhat 3-nerved, very acute. Teeth of Cal. subrotundo-ovate, very obtuse. **p.** 7. *Sandy and stony hills.* Turkenschanze near Vienna. Wagram.

8. **muralis** L Stem dichotomo-paniculate, much branched. Fl. axillary, solitary. L ✓ lineari-lanceolate. **a.** 7, 8. *Dry fields.* Fr. Sw. G. n. It.

B. *Calyx with scales at the base.*

9. **saxifraga** L Stem numerous, rigid. Fl. ✓ in a terminal panicle. Cal. scales 4. L. linear, rigid. **p.** 6–8. *Stony.* s. Eur.

108. DIANTHUS L

A. Fl. in heads, entirely enveloped in seariose Bracts. Sp. 1, 2.

B. Fl. clustered, furnished with numerous membranaceous or coriaceous Bracts, but not entirely covered by them. Sp. 3–7.

C. Fl. approximate, but without any Braets of a different character from L. Sp. 8–10.

D. Fl. scattered or solitary. Petals not fringed. Sp. 11–24.

E. Fl. scattered. Petals fringed. Sp. 25–31.

A. *Flowers in heads, enveloped in scariose Bracts.*

1. **prolifer** L Stem smooth. Outer Bracts shorter, pointed; inner very obtuse. Fl. sessile. Scales of Cal. exceeding tube. Seeds finely shagreened. **a.** 5–7. *Dry, grassy.* m. and s. Eur. ✓

β. diminutus. 1-flowered.

2. **velutinus.** Guss Middle of the stem villous. Outer Braets shorter, pointed; inner very obtuse. Fl. on short stalks. Scales of Cal. about ✓ equal to tube. Seeds acutely tubercled. **a.** 4, 5. *Sandy shady hills.* Sic. K. Nap.

B. *Fl. in clusters. Bracts membranous or coriaceous, similar to the scales of calyx.*

3. **Carthusianorum.** L Cal. scales 4, ob- ✓

ovate or obcordate, with a subulate acumen, exceeding half the length of tube. Bracts generally longer. Length of Sheath about four times width of L. Lamina of Pet. as long as claw. **p.** 6–8. *Barren.* m. and s. Eur.

4. **atrorubens.** All Cal. scales 4, obovate, with subulate acumen, exceeding half the length of tube. Length of Sheath about four times width of L. Lamina of Pet. about half as long as claw. **p.** 6, 7. *Grassy.* Vall. Uri. s. Tyr.

5. **liburnicus.** Bartling Cal. scales 4, with a subulate cusp, nearly equal. Bracts exceeding scales. Length of Sheath about twice width of L. **p.** 7. *Stony hills.* Coasts of Mdt.

β. *Balbisii.* Large, glaucous. Fl. numerous and densely clustered. Liguria.

6. **Bisignani.** "Fl. clustered. Scales of Cal. tiled in four rows; inner shorter than the outer, ciliate. Cusps of the outer setaceo-subulate. L. linear, semiterete, smooth, glaucescent and quite entire. Stem shrubby. **w.** 7, 8. *Calc. rocks near the coast.* Sic. Luc. Cal."—Guss.

7. **Bertolonii.** Cal. scales numerous, tiled in four rows, the inner gradually larger, but only reaching to about one-third of tube. Bracts very small. Sheath about as long as width of lanceolate L. **p.** 6–8. *Maritime rocks.* Sic. Cal. [This is *D. Bisignani* of Bertoloni, who professes to have received specimens both from Tenore and Gussone; but the perfect contrast in the scales of calyx renders it impossible that it should be the same plant.]

C. *Flowers approximate. No Bracts of a distinct character from the L.*

8. **Armeria.** L Cal. scales 2. These and the leafy Bracts lanceolato-subulate, hairy, as long as tube, erect. L. subulate, hairy, hardly united at base. **a.** 7, 8. *Dry or gravelly pastures.*

9. **barbatus.** L Cal. scales ovate, with subulate cusps. Outer Bracts lineari-lanceolate, very acute, spreading or somewhat reflexed. L. lanceolate, on short hafts. **p.** 7, 8. *Mountain meadows.* Alps of It. s. of G.

10. **Seguieri.** Villars Cal. scales 4–6. Leafy Bracts lanceolate. Length of Sheath hardly equalling the width of L. **p.** 6–8. *Grassy hills and thickets.* m. and s. G. Sw. &c.

α. *asper.* Cal. scales spreading, somewhat rough.

β. *sylvestris.* Erect.

sp. Sylvaticus Cal sc. appressed not Ciliated, with a short point (?).
Gr. & G.

γ. *collinus.* Heads of Fl. dense.

δ. *controversus.* Pet. almost laciniate.

D. *Flowers scattered or solitary. Petals not fringed.*

11. **pungens.** L Stem few-flowered. Cal. scales very short, mucronate, spreading. Pet. entire. L. tufted, subulate. **p.** Mt. la Clape, Narbonne. cal. elongate +

12. **neglectus.** Lois Stem 1-flowered. Cal. scales ovate, with straight, subulate acumen, equalling tube. L. linear, rigid, tapering from the middle, finely acute, 3-nerved. Margin rough. Pet. crenate. **p.** 7. *Very high.* swiss and it. Alps. *very rare.*

13. **alpinus.** L Stem 1-flowered. Outer Cal. scales about as long as tube; inner half as long. Pet. crenate, twice as long as calyx. L. lineari-lanceolate, obtuse, 1-nerved. **p.** 7, 8. *Calc. mountains.* Aus. Styr.

14. **glacialis.** Hänke Stem tufted, 1-flowered. Cal. scales as long as tube. Pet. serrate, half as long again as calyx. L. serrulate, obtuse. **p.** 7. *Very high granitic mountains.* w. Alps.

15. **ciliatus.** Guss Woody, tufted. Cal. scales 6–8, ovate, somewhat spinuloso-mucronate, about one-third as long as tube. Lamina of Pet. oblong, nearly entire, beardless. L. ciliolate; upper acuminate. **w.** 6–8. Abr. Pola.

16. **deltoides.** L Decumbent. Cal. scales about 2, elliptic, with a subulate cusp about half as long as tube. Lower L. oblong, obtuse; upper narrower, acute. **p.** 6–8. *Gravelly.*

17. **tripunctatus.** Branches ascending. Cal. scales 4, with a long cusp, shorter than tube. Lamina of Pet. cuneiform, sharply toothed, hairy above. **p.** 5. Reggio.—Bert.

18. **attenuatus.** Sm "Much branched, diffuse. Stem crooked at base. Cal. diminished upwards. Fl. solitary. Scales about 6, short, lanceolate, acuminate. Pet. crenate, their claws exceeding the calyx. L. subulate. **p.** 7, 8. *Sea-coast.* s. Fr."—DC.

19. **hirtus.** Vill "Fl. nearly solitary. Cal. scales 6, ovate, mucronate, much shorter than tube. Pet. crenate. L. subulate, rough on the margin. **p.** *Hills.* Dau. Prov."—DC. ++

20. **Hornemanni.** Ser "Flower-stalks bifid. Cal. scales lanceolate, cuspidate, erect, shorter than tube. Pet. incise. L. linear, nervose, serrulato-scaber. **p.** Trieste. It."—Ser. *in DC.*

+ D. brachyacanthus Boiss
cal. sc. obtuse awn. thicker & shorter
cal. oval s.l. flowered

++ D. Requienii. Gr & G.
cal. sc. appr. long atten. thick at base
l. linear, plane! not subulate!

21. **Caryophyllus.**♃ Barren shoots procumbent, much branched. Cal. scales 4, ovate, somewhat mucronate, about one-fourth of tube. Pet. very broad, beardless. L. lineari-subulate, channeled, glaucous. Margin of upper part smooth. **p.** 6, 7. *Rocks.* It. *Walls.*

✓ 22. **sylvestris.** Wulfen Barren shoots short. Cal. scales 4, ovate, about one-fourth of tube. Pet. very broad, beardless. L. linear, acute. Margin rough. **p.** 7–9. *Barren.* s. Eur.

✓ 23. **virgineus.**♃ "Stem about 1-flowered. Cal. scales very short and blunt; two of them distant. Pet. crenate. L. tufted, linear, rigid, serrulate. **p.** 6–8. Narb. Rous."—DC.

sp. β. *subacaulis.* Vill Stems crowded, very short, 1-flowered. Mt. Ventous. Gr & G

✓ 24. **cæsius.** Sm Stem densely tufted, usually 1-flowered. Cal. scales obtuse, with a short point, about one-fourth as long as tube. Pet. crenate, bearded. L. somewhat obtuse, rough on margin. **p.** 7, 8. *Rocks.* Somerset. Jura. Grande Chartreuse. Carrara. Rhine. Sil.

E. *Petals fringed.*

✓ 25. **plumarius**♃ Stem 2–5-flowered. Cal. scales subrotundo-ovate, with a short mucro. Pet. digitato-multifid, bearded. Inline obovate. L. lineari-subulate, rough on margin. **p.** 6–8. *Stony.* Aus. Sty. Salz. Bav. Baden. n. It.

✓ 26. **arenarius.**♃ Stem densely tufted, usually 1-flowered. Cal. scales ovate, obtuse, with a short mucro, about one-fourth as long as tube. L. linear, short, mucronulate. Pet. pinnatifido-multifid. Inline oblong, *white, with red hairs.* **p.** 5, 6. *Sandy shores* of Baltic. Sil.

✓ 27. **gallicus.** Pers Stem ascending, usually 1-flowered. Cal. scales short, ovate, somewhat mucronate. Pet. beardless, dentato-multifid. L. linear, somewhat ciliate; lower obtuse. Inline of Pet. obovate. **p.** 6, 7. *Sandy shores.* w. Fr.

✓ 28. **superbus**♃ Pan. somewhat fastigiate. Fl. scattered. Cal. scales short, ovate, acuminato-aristate, about one-third as long as tube. Pet. pinnato-multipartite. Inline oblong. Mouth hairy. Lower L. somewhat obtuse; upper lanceolate. **p. b.** 6–8. *Woods.* m. and s. Eur.

✓ 29. **monspessulanus**♃ Stem ascending, panicled. Fl. usually in pairs. Cal. scales ovate, cuspidate, half as long as tube. Pet. digitato-multifid, beardless. Inline obovate. L. lineari-lanceolate, somewhat acute, serrulate. **p.** *High thickets.* s. Fr. Sw. *rare.* Pdm. Carrara.

30. **saxatilis.** Pers "Tufted, somewhat decumbent. Stem 2–3-flowered. Cal. scales ovate, with a long mucro, shorter than tube. Pet. beardless. **p.** ? *Rocks.* Clermont."—DC.

31. **tener.** Balbis Slender. Stem simple, 1-flowered. Pet. beardless. Cal. scales 2, lanceolate, acuminato-cuspidate, about half as long as tube. L. lineari-filiform. Pet. laciniate. **p.** 6–8. *Borders.* Tende.

109. SAPONARIA.

A. *Calyx pentagonal, with 5 wings.*

✓ 1. **Vaccaria.**♃ Pan. lax, dichotomous, hairless. Bracts membranous, acute. L. ovato-lanceolate, sessile. **a.** 6, 7. *Corn.*

✓ 2. **ocymoides.**♃ Stem dichotomous, procumbent. Pan. cymose, diffuse. Cal. terete, villous, *purple,* with glandular hairs. L. elliptico-oblong. Lamina of Pet. oblongo-obovate. **p.** 5, 6. *Stony.* m. and s. Eur.

3. **calabrica.** Stem single, dichotomous, procumbent. Fl. corymbose. L. oblongo-spatulate. Lamina of Pet. subrotund. **a.** 4, 5. *Hills.* Catanzaro in Calab.

B. *Calyx without wings.*

✓ 4. **officinalis.**♃ Stem erect. Cymes compact, at the end of short branches. Appendage of Pet. linear. L. elliptico-lanceolate, nerved. **p.** 8, 9. *Hedges and uncult.*

5. **depressa.** Fl. about 3, in a terminal head—rarely with an additional lateral one. Cal. very long, 5-edged. Hairs viscid. Pet. bifid. Crown acute. Root L. oblongo-spatulate, apiculate. **p.** 6–8. *Sandy mns.* Madonie. Ætna.

✓ 6. **lutea**♃ Tufted. Fl. in involucrate, 4–6-flowered heads. Cal. cylindrical, woolly; divisions short, obtuse. Pet. obovate, entire, *yellow.* All L. linear, sessile; those of flowering stem fringed at base. **w.** 6, 7. *Mns., very high.* Savoy. Pdm.

✓ 7. **cæspitosa.** DC "Tufted. Stem nearly naked. Fl. somewhat umbellate. Cal. cylindrical, deeply divided. Segments acute. Pet. large, emarginate, *pink.* Appendage cloven. Lobes in two very narrow segments. L. linear, hairless. **p.** *Barren, high.* Pyr."—DC.

8. **bellidifolia.** Sm Stem L. 2–4, distant.

Fl. in involucrate heads. Cal. terete, hairy; teeth acuminate. Pet. linear, emarginate, crenate, *yellow*. Root L. spatulate on long stalks. Margin undulate. **p.** 6, 7. *Rocky, high.* Abruzzi on Monte Velino and Monte Morrone.

9. **orientalis.** L Dichotomous. Branches divaricate. Fl. axillary, on rigid stalks as long as Fl. Cal. hispid; teeth acute. L. lineari-spatulate. **a.** Carn. *Not in Koch.* Collioure and Elne in Rous.—Lois.

110. CUCUBALUS. L

1. **bacciferus.** L Branches divaricate. L. ovate. Cal. campanulate. Pet. distant. **p.** 6–8. *Shade.*

111. SILENE. L

A. Stems very short and tufted. Stalks 1-flowered. Cal. somewhat inflated. Sp. 1–3.

B. Stems erect, many-flowered. Cal. with about 30 parallel nerves. Sp. 4, 5.

C. With evident stem, (as in all the following divisions.) Cal. inflated, about 20-nerved at base, and everywhere veiny. Sp. 6–11.

D. Flowers in racemes, not opposite to one another. Cal. 10-nerved at base; intermediate membrane translucent and nearly colourless.

- **i.** Thecaphore, or stalk of receptacle within the calyx, very short. Sp. 12–17.
- **ii.** Thecaphore at least half as long as capsule. Sp. 18–26.

E. Flowers in whorls in opposite racemes, forming a raceme-like panicle. Sp. 27–29.

F. Flowers opposite, on opposite branches of panicle.

- **i.** Branches short, forming a raceme-like panicle. Sp. 30–32.
- **ii.** Branches spreading, forming a lax panicle.
  - **a.** Thecaphore very short. Sp. 33.
  - **b.** Thecaphore about half as long as capsule. Sp. 34–37.
  - **c.** Thecaphore about as long as capsule. Sp. 38–43.

G. Flowers opposite, on alternate branches. Sp. 44.

H. Flowers solitary, or nearly so. Sp. 45–49.

I. Flowers scattered, on an unequally dichotomous panicle.

- **i.** Flower-stalk two or three times as long as calyx.
  - **a.** Seeds crested on the back. Sp. 50, 51.
  - **b.** Seeds not crested. Sp. 52–60.
- **ii.** Flower-stalk about as long as calyx. Sp. 61, 62.
- **iii.** Flower-stalk shorter than calyx. Sp. 63–65.

K. Flowers corymbose, the upper close together. Sp. 66–71.

Uncertain. Sp. 72, 73.

A. *Tufted. Stems very short! Stalks 1-flowered.*

1. **acaulis.** L Stems prostrate, very branched. L. linear, acute, ciliate at base. Fl.-stalks much longer than 5-nerved calyx. **p.** 6, 7. *Very high.* cap oblong ✓

All.

2. **exscapa.** Stems numerous, erect, nearly simple, forming a cushion. L. linear. Fl.-stalks not longer than 10-nerved calyx. **p.** 7, 8. *Snowy.* Alps. cap. oval v of. 1

Wulf

3. **Pumilio.** Stems somewhat diffuse. L. lineari-spatulate, somewhat downy. Fl.-stalk very short. Cal. hairy, inflated, many-nerved. **p.** 6, 7. Alps of G. ✓

B. *Stem erect. Calyx with about* 30 *parallel veins.*

4. **conica.** L L. linear. Cal. short. Pet. 2-lobed. Caps. ovoid. *Seeds not more than half as large as in the following species.* **a.** 5–7. *Dry sandy.* ✓

5. **conoidea** L L. lineari-lanceolate. Cal. long. Pet. obovate, nearly entire. Caps. bottle-shaped. **a.** 6, 7. *Fields.* Luxemburg. Nice. ✓

C. *Calyx bladder-like, not viscid,* 20-*nerved at base, everywhere veiny.*

Thore, L. DC

6. **fimbriata.** Pubescent. L. large, ovato-lanceolate. Fl. in an ample panicle. Cal. very wide, with broad teeth. Pet. flat, fringed! incurved after flowering. **p.** Sic.—DC. *Not in Guss. nor in Bert.*

With

7. **maritima.** Fl. solitary, or in a few-flowered, dichotomous panicle. Pet. cloven, each with a cloven acute scale. L. elliptic or lanceolate. **p.** 8, 9. *Sea-shore and mountain torrents.* In very luxuriant specimens, the panicle is sometimes 7-flowered; this includes *S. uniflora* and (according to Bertoloni) *S. Fabaria* of the French botanists. ✓

commutata Guss? Bracts scarious. no crown!

8. **Fabaria.** L Erect, smooth, base woody. Pet. cloven. Crown of very short emarginate scales. Seeds roughened with concentric warty lines. L. elliptico-oblong, mucronulate, ciliato-serrulate, somewhat fleshy. **p.** 4, 5. *Stony hills.* Sic. *Var. of* maritima?

✓ 9. **inflata.** Sm Erect. Panicle terminal, dichotomous, many-flowered. Cal. veined. Pet. cloven. Claws cuneiform, crowned with two obtuse tubercles. Styles very long. L. elliptic or ovato-lanceolate, acuminate. Caps. ovoid. **p.** 7. *Fields and uncult. In flourishing specimens, the Panicle is at least three times divided; giving, typically, 15 flowers or more.*

S. Tenoriana Coll

β. *angustifolia.* L. lineari-lanceolate.

✓ 10. **Behen.** L "Erect, smooth. L. lanceolate, acute; lower spatulate. Pan. long and lax. Cal. campanulato-oblong, contracted at the mouth. Pet. 2-lobed, crowned with small, entire, or bicuspidate scales. **a.** 5, 6. Capo D'Armi in Calabria."—Bert.

11. **lanuginosa.** Woody, tufted. Stems woolly. L. lineari-lanceolate; margin woolly; lower very long. Cal. pubescent. Teeth triangular. Pet. 4-cleft, lateral divisions shorter, linear. **w.** 7, 8. *Mns.* of Carrara.

D. *Flowers not opposite, in secund axillary spikes. Striæ of Calyx* 10.

i. *Calyx cylindrical. Stalk of Receptacle very short.*

✓ 12. **dichotoma.** Ehrh L. elliptico-lanceolate, acuminate; lowest spatulate. Rac. many-flowered. Bracts membranous. Cal. nearly sessile, cernuous in flower, ovato-oblong and erect in fruit. Nerves quite simple. Teeth ovate, acute. Pet. deeply cloven, with a blunt crest. **b.** 5, 6. *Uncult.* Between Vienna and Hungary.

✓ 13. **gallica.** L L. oblongo-obovate, with a short acumen; floral L. linear, herbaceous. Cal. strigose. Teeth subulate. Nerves simple, or the intermediate merely throwing off a branch at each side of the top. Caps. subgloboso-ovate, splitting into six recurved teeth. **a.** 6, 7. *Fields.*

α. Pet. obovate.

✓ β. *anglica.* Pet. emarginate. Plant more branched.

✓ γ. *quinquevulnera.* Lamina of Pet. orbicular, each marked with a bloody spot.

✓ δ. *lusitanica.* Lamina of Pet. triangular; outer margin denticulate.

ε. *cerastoides.* Upper L. linear. Pet. emarginate. Teeth of open Caps. erect. ✓

14. **tridentata.** D.C. "Branched. L. lineari-lanceolate. Spike secund. Cal. subcylindrical. Teeth of Cal. long. Pet. with three teeth. ✓ **a.** 5, 6. *Stony.* Tarbes by the bridge over the Adour."—Duby. v of 13 Gr & G

15. **neglecta.** Erect, hirsute, branched. L. obovato-oblong, acuminate. Upper Bracts lineari-lanceolate, scariose and ciliate at the base. Cal. hirsute; the upper part veined between the nerves. Primary nerves simple. Teeth twice as long as broad. Pet. emarginate. Caps. a lengthened ovoid. **a.** 4. *Walls and dry.* Sic. s. It.

16. **nocturna.** L Hairy at base. L. pubescent with long cilia at base; lower spatulate; upper lineari-lanceolate. Spike crowded. ✓ Upper part of Cal. with veins between the nerves. Cal. downy. Teeth about as long as broad. Pet. narrow, bifid. **a. b.** 4, 5. *Walls and uncult.* It. Nice. s. Fr.

17. **brachypetala.** Rob L. obovato-spatulate, hirsute, and with long cilia at base. Primary nerves double; intermediate branching. Cal. hirsute. Pet. bifid, very small. **a.** 6. s. Fr. It. v of 16 Gr & G

The plant of Bertoloni seems to be a different species; but he quotes DC.

ii. *Thecaphore, or stalk of Receptacle, at least half as long as Capsule.*

* *Calyx clavate, contracted on the Thecaphore.*

18. **trinervia.** Stem slender, branched. L. 3-nerved; lower obovato-lanceolate; upper linear. Cal. erect, hispid. Nerves simple, with bulbiferous strigas; a row of calli on each outer nerve. Pet. cloven; crest of two emarginate lobes. **a.** 7. *Hills* about Rome.

19. **pendula.** Branched, decumbent, pubescent. L. elliptic, attenuate; lower spatulate. Fl. axillary, nodding. Cal. with simple nerves, and usually intermediate calli. Cal. of Fruit shortly clavate. **a.** 4, 5. *Fields.* Rome. Naples.

20. **sericea.** All Silky. Stem decumbent or ascending. L. ciliate at base; lower spatulate; upper lanceolato-linear. Fl. somewhat remote, stalked. Cal. erect, all over equally hairy. Intermediate nerves forked at top. Pet. bipartite. **a.** 5–7. *Sandy shores.* It.

21. **pubescens.** Lois. "Everywhere pubescent. Stem branched at base, spreading.

v of 20 Gr & G

Branches nearly erect. L. linear, ciliate at base. Fl. terminal and axillary. Cal. club-shaped. Pet. obtuse, cloven. Claws exceeding calyx. *Fl. pink or purplish.* **a.** *Sandy shores.* Ajaccio."—Lois.

22. **vespertina.** Retz L. obovate, attenuate. Racemes usually in pairs, with about five alternate flowers. Cal. without intermediate veins, drooping, on an erect stalk; club-shaped and erect in the fruit. Teeth ovate, somewhat acute. Pet. deeply cloven. Crest acute. **a.** 5, 6. *Sandy shores.* Trieste.—Bert.

23. **sabuletorum.** "Branched from base, erect, *three feet high,* hirsute. Lower L. spatulate; upper lanceolate. Fl. in spikes and in the forks. Cal. narrow subcylindrical, furnished with long hairs. Pet. emarginate, somewhat cloven. **a.** ? *Sandy.* Aleria in Corsica."—Duby.

24. **hispida.** Desf Erect. Lower L. oblongo-obovate, acuminate; upper lanceolate. Racemes in pairs, many-flowered. Cal. nodding in flower; erect in fruit. Intermediate Nerves branched. Teeth subulate. Thecaphore as long as germen. **a.** 5, 6. s. It. Sic.

** *Calyx somewhat bladder-like, hardly contracted on the Thecaphore.*

25. **ciliata.** Pubescent. Stems numerous, prostrate, very leafy at base. L. ciliate at base; lower obovato-lanceolate; upper linear. Raceme 2–4-flowered. Cal. cylindrico-campanulate. Teeth very obtuse, with scariose margin. Pet. bipartite. **w.** 7, 8. *High.* Pyr. Cantal.

26. **Græfferi.** "Erect, pubescent. Lower L. lanceolate; upper linear, short. Raceme few-flowered. Cal. of Fruit cylindrico-campanulate, erect. Pet. cloven. Caps. oblong, about as long as thecaphore. **p.** 6–8. Apen. *The stem is less woody at base, and less branched, than in* ciliata."—Bert.

E. *Flowers in whorls on the opposite branches of a raceme-like Panicle.*

27. **Otites.** Sm. Erect. Lower L. spatulate; upper few, lanceolate. Fl. diœcious. Cal. of fertile Fl. tubuloso-campanulate. Pet. linear, undivided. Crest 0. **p.** 7, 8. *Sandy.*

β. umbellata. Raceme very short, umbel-like. w. Fr.

28. **staminea.** Erect. Lower L. spatulate; upper linear. Fl. complete. Cal. tubuloso-campanulate. Pet. cloven. Claws ciliate. Stamens exceeding corolla. Thecaphore nearly as long as capsule. **p.** 6, 7. Monte Vettore. Monte Cornu. Monte di Mezzo.

29. **viscosa.** Pers Pubescent; very viscid. Stem simple. L. lineari-lanceolate, undulate. Fl. large, nodding. (Raceme whorled. Stalks opposite, 1–3-flowered, Koch.) Caps. cylindrico-clavate. Pet. cloven. Crest 0. **b.** 6, 7. *Uncult. and sandy pastures.* Boh. Mor. *I have followed DC. in putting this with the* Otites.

F. *Flowers opposite, on the opposite branches of Panicle.*

i. *Branches short, forming a raceme-like Panicle.*

30. **tatarica.** Pers Stem densely leafy. L. lineari-lanceolate, attenuate. Raceme secund, erect. Branches 1–3-flowered. Fl. nodding. Cal. cylindrico-clavate. Teeth acute. Pet. cloven. Crest 0. Thecaphore one-fourth of capsule. **p.** 7, 8. *Sandy shores* of Oder and Warthe in Neumark. ✓

31. **chlorantha.** Ehrh. Hairless. Stem erect, simple. L. lanceolate, attenuate; upper few, short, linear. Raceme secund. Branches 1–3-flowered. Fl. nodding. Teeth of Cal. obtuse. Pet. crested, cloven. Segments filiform. Thecaphore about one-fourth of capsule. **p.** 6–8. *Sandy hills.* n. e. G. ✓

Sibth & Sm

32. **mollissima.** Very silky. Stem erect, branched. L. thick; lower large, oblongo-spatulate; upper lanceolate. Teeth of Cal. obtuse, with a membranous margin. Thecaphore about as long as capsule. **p.** 7. *Mns.* Cagna and Coscione, Cors.

ii. *Branches long, forming a wide Panicle.*

a. *Thecaphore very short.*

33. **viridiflora.** Erect, soft, hairy, viscid. L. large, ovate, acute; lower stalked, spatulate. Panicle few-flowered. Fl. nodding. Cal. of Fruit ovoideo-turgid, erect. Teeth acuminate. Pet. with a long claw, narrow, cloven, crested. **b. p.** 5, 6. *Woody hills.* It. n. Sic. abundant at Albano.

34. **rubens.** "Hairy. Stem erect. Stem L. lanceolate. Floral L. dilated at base. Fl. nodding. Stalks 3–6-flowered. Cal. coloured. Pet. cloven, crested. Clagenfurth."—DC. *Not in Koch. I place this here, without knowing either the shape of the Panicle or the length of the Thecaphore, because DC. places it between* nutans *and* viridiflora.

b. *Thecaphore about half as long as capsule.*

35. **nutans.** L. Pubescent. Stem glandular at top; very leafy at base. Lower L. elliptic, attenuate; upper lineari-lanceolate. Fl. nodding. ✓ Cal. somewhat ventricose. Pet. bipartite, reflexed, with a long crest. Thecaphore less than half as long as capsule. **p.** 5–7. *Rocks and pastures.*

β. amblevana, Lejeune. Smooth. L. linear. Pet. greenish. Spa.

36. **fructicosa.** L. Stem ascending, woody at base. L. smooth and shining, obovato-lanceolate, acute, ciliate; upper lanceolate, finely acuminate. Panicle contracted, few-flowered, with viscid hairs. Cal. very long. Teeth acute. Caps. ovoid with snout. **w.** 4–6. *Fissures of rocks.* Sic.

37. **catholica.** Otth Pubescent; upper part viscid. Stem erect. L. ovato-lanceolate, acuminate; lower stalked. Panicle lax. Teeth of Cal. oblong. *Fl. small.* Pet. bipartite. Crest 0. **p.** 7. 8. Tivoli. Albano. Monte Cornu.

c. *Thecaphore about as long as capsule.*

38. **pauciflora.** Salzm Erect or ascending, velvety. Lower L. lanceolate, stalked; upper linear. Panicle few-flowered. Teeth of Cal. obtuse, with a scariose and densely ciliate margin. Pet. cloven, crested. Caps. ovato-oblong, on a stalk about as long as itself. **p.** 6, 7. *Rocks.* Laconi in Sardinia. Quenza and Calenzano in Corsica. *Seems doubtful if distinct from* S. italica, *which, however, it does not much resemble in Bertoloni's description.*

39. **paradoxa.** L. Finely pubescent. Stem erect; upper part viscid. L. acute, densely ciliate; lower obovato-lanceolate; upper linear. Teeth of Cal. ovato-lanceolate, acute. Margin scariose, ciliate. *Pet. large.* Crest of acutely cloven scales. **p.** 6, 7. Apen.

40. **Requienii.** Oth "Pubescent. Root thick, woody. Stems tufted, ascending. L. densely ciliate; lower obversely lanceolate or obovate, acute, broadly cuneate at base; upper lanceolate, acuminate. Panicle corymbose, somewhat spreading. Pet. cloven, crested. Caps. oblong. **w.** 5, 6. Cors."—Bert.

41. **Salzmanni.** Bad Softly downy. Root woody. Stem simple. Lower L. subrotundo-spatulate; upper lanceolato-linear, acute. Panicle erect. Teeth of Cal. acute. Crest 0. **w.** 5, 6. Capo di Noli. Gorgonia.

42. **italica.** L. Pubescent. Panicle erect, lax. Branches trifid. Lower L. spatulato-lanceolate; ✓ upper lineari-lanceolate. Teeth of Cal. obtuse. Crest 0. **p.** 6, 7. *Stony hills.* s. Fr. Adr. G. It.

43. **nemoralis.** Waldst Pubescent. Stem simple. Lower L. subrotundo-elliptic, hafted; upper lanceolate, with a woolly beard near the ✓ base. Panicle erect, somewhat crowded. Teeth of Cal. obtuse. Crest 0. **p.** 6, 7. *Woods.* e. G.

G. *Flowers opposite, but on alternate branches.*

44. **Nicæensis.** All Very viscid, villous. Branches ascending. Lower L. lanceolate, attenuate; upper few, short, linear. Branches of Panicle short. Cal. of Fruit erect. Teeth ✓ ovato-lanceolate, somewhat obtuse. Petals crested. Thecaphore nearly as long as ovato-oblong capsule. Seeds smooth. **a.** 4–6. *Sandy shores.* It.

H. *Flowers solitary: i.e., not so combined as to be well placed in the other divisions.*

i. *Thecaphore very short.*

45. **Elizabethæ.** Upper part with viscid hairs. L. lanceolate. Cor. twice calyx. Scales of Crest short, ending in four long bristles. **w.** 7, 8. it. Alps. *occ.*

ii. *Thecaphore as long as capsule.*

46. **corsica.** DC Pubescent, very viscid. Stem procumbent, leafy. L. fleshy, small, obovate. Fl. nearly solitary. Teeth of Cal. lanceolate, ✓ obtuse. Pet. crested; the claw much exceeding calyx. Seeds smooth. **p.** or **w.** 4–6. *Sandy shores.* Cors. Sard.

47. **saxifraga.** L. Tufted, rough with short hairs. L. linear, acute. Fl. usually solitary, ✓ on very long stalks. Cal. hairless. Teeth ovate, obtuse. Pet. bipartite, crested. Claw ciliate. **p.** 6, 7. *Stony mns.* Pyr. Cev. Alps. Apen.

48. **vallesia.** L Tufted. Hairs viscid. Root woody. Stem decumbent, 1–3-flowered. L. lanceolate; lower attenuate. Cal. venoso-reticulate above. Teeth oblong. Pet. crested. **p.** 7, 8. *High rocky.* Alps. *rare.* Mont Ventous. Mountains of Carrara.

49. **cordifolia.** Viscid, tufted. Stems nearly simple, hispid. L. ovate, very acute, rough, ciliate; lower very small. Fl. 1–3, nearly sessile. Teeth of Cal. subulate, acuminate. Pet. crested. Thecaphore somewhat shorter than capsule. **p.** 7, 8. *Rocks.* Pdm.

I. *Flowers scattered in an unequally dichotomous Panicle.*

i. *Stalk of Flower two or three times as long as calyx.*

a. *Seeds crested on the back.*

50. **quadrifida.** L Tufted. L. linear, very narrow. Cal. of Fruit turbinate. Teeth parabolical. Pet. with four short teeth, crested. Thecaphore very short. **p.** 6, 7. *High moist rocks.* Alps. Pyr.

Jacq

51. **alpestris.** Tufted. L. lanceolate. *Fl. large.* Cal. of Fruit turbinate, much shorter than Fruit. Teeth semioval. Pet. with four teeth, crested. Thecaphore very short. **p.** 7, 8. *High moist.* e. Alps.

b. *Seeds not crested.*

Pers

52. **Campanula.** Quite smooth. Stem nearly erect, leafy at base. All L. linear, acuminate. Stalks 1–3-flowered. Cal. of Fruit subclavato-campanulate. Teeth obtuse. Crest 0. Thecaphore nearly as long as capsule. **p.** 7, 8. *Shady rocks.* Pdm.

53. **rupestris.** L Quite smooth. Stem erect. L. ovato-lanceolate. Fl. small. Cal. turbinate. Pet. obcordate, crested. **p.** 7, 8. *Dry rocks.* Alps. Vosges. n. Apen.

Bert

54. **inaperta.** L Rough. Stem with alternate branches. L. linear, cuspidate. Cal. ventricose; upper part finely veined. Teeth triangular. Pet. cloven, crested. Segments linear, exceeding calyx. Stamens usually 5. Thecaphore from half as long to as long as capsule. **a.** 7–9. *Rocky.* Prov. Umb. Abr.

? inaperta L Bert

55. **scabra.** Rough. Stem erect. L. linear, channeled, acute; uppermost filiform. Cal. ventricose. Teeth acute, with a white, membranous margin. Pet. slightly cloven, not exceeding calyx. Thecaphore one-fourth or one-third of calyx. **p.** 5, 6. Calvi in Corsica. v of 56 grg.

Jacq

56. **sedoides.** Hairs viscid. L. somewhat fleshy, obtuse; lower spatulate; upper oblong. Cal. cylindrical. Teeth obtuse. Pet. small, obcordate, crested. **a.** 4, 5. Sic. Mars. Osero.

Portensis L, Thor

57. **bicolor.** Smooth, somewhat viscid. Stem much branched at base. L. linear. Cal. veiny at top. Teeth very obtuse, ciliate. Pet. cloven. Segments lanceolate. Thecaphore longer than nearly globose capsule, shorter than calyx. **a.** 6, 7. *Sand.* w. Fr.

58. **Mandralisci.** Smooth. Stems several, ascending. Lower L. obovato-spatulate; upper oblongo-lanceolate. Cal. turbinate. Teeth lanceolate, acute. Lamina of Pet. oblongo-cuneate, emarginate. Crest 0. Thecaphore as long as calyx! **a.** 4, 5. *Sandy shores.* Mondello near Palermo.

59. **cretica.** L Stem erect, nearly simple. L. spatulato-lanceolate; upper linear, finely acute. Pan. lax. Cal. veined above. Pet. crested with somewhat long, bipartite, acute scales; cloven to middle; twice calyx. Thecaphore not half as long as capsule. **a.** 5, 6. *Fields; often among flax.* s. It.

60. **tenuiflora.** Erect; upper part smooth. Lower L. oblongo-spatulate; upper lanceolate and linear. Pan. dichotomous, few-flowered. Teeth of Cal. lanceolate, acute. Pet. small, slightly emarginate, hardly exceeding calyx, crested with long, bipartite, acute scales. Caps. nearly sessile. **a.** 4, 5. *Cult.* Lucania. Cal. Sic.

ii. *Stalk of Flower in forks, about equal to calyx.*

61. **sassiana.** "Stems branched, divaricate. Lower L. spatulate, obtuse; upper lanceolate, acute. Pan. dichotomous or simply forked, divaricate. Teeth of Cal. broad, obtuse, ciliate. Pet. crowned, lanceolato-oblong, entire. Stalk shorter than capsule. **a.** 6, 7. Albenga."—BERT.

62. **noctiflora.** L Hairs viscid. Stem erect. L. large; lower oblong, acute; upper lanceolate. Cal. cylindrico-ventricose, veined above. Teeth subulato-filiform. Pet. bipartite, crested, denticulate. Caps. nearly sessile. **a.** 6–8 *Fields, occ.*

iii. *Stalk of Flower in forks, shorter than calyx.*

63. **muscipula.** L Nearly hairless, but very viscid. Stem erect. Lower L. lanceolato-spatulate; upper linear. Cal. veiny at top. Pet. emarginate. Caps. oblong, about twice Thecaphore. **a.** 4, 5. Corbières. Draguignan. Iapygia.

Gmel

64. **linicola.** Stem erect, rough, not viscid. L. smooth; lower obovate; upper lineari-lanceolate. (Cal. and stalks rough with short hairs, KOCH.) Cal. veiny. Stalk half as long as obtuse capsule. Pet. entire. **a.** 6, 7. *Among flax.* Bav. Sw. n. It. *rare.*

65. **echinata.** Pubescent. Lower L. spatulate; upper linear. Nerves of Cal. with bristles on tubercles. Intermediate nerves rough. Pet. cloven, crested. Caps. subglobose, hardly as long as thecaphore. **a.** 5, 6. Viterbo. Apulia. Cal.

K. *Flowers corymbose; the upper close together.*

66. **Armeria.** L Quite smooth, with viscid bands. Lower L. ovato-lanceolate. Corymb dense, many-flowered. Teeth of Cal. obtuse. Pet. obcordate, crested. Thecaphore about as long as capsule. **a.** 7, 8. *Stony fields.* Fr. Ger. It. ✓

67. **fuscata.** Erect. Hairs of stem spreading, jointed; of Cal. and stalk glanduliferous. L. (rough with minute tubercles, DC.,) somewhat ciliate at base; lower spatulate; upper lanceolate. Cal. of Fruit somewhat nodding. Teeth obtuse. Pet. obovate, entire, crested. Thecaphore about as long as capsule. **a.** 4, 5. *Cult.* Sic. Sard. Cal. w. Lig.

68. **rubella.** "Erect. Lower L. broadly oblongo-spatulate, very obtuse; upper oblongo-lanceolate; all undulated. Pan. short, coadunato-corymbose. Cal. of Fruit shortly clavate. Teeth obtuse. Margin membrano-ciliate. Pet. oblongo-cuneate, emarginate, crested. Stalk about half as long as capsule. **a.** 3, 4. s. Sard."—BERT. *This does not seem to be the plant of Linnæus:*—"Calycibus subglobosis glabris venosis." ✓

69. **corymbifera.** Branched from base; upper part very viscid. L. lineari-subulate. Branches ending in a few-flowered Corymb. Teeth of Cal. somewhat acute. Lamina of Pet. small, cloven. Thecaphore about half as long as capsule. **a.** 6, 7. Ceriale in Liguria.

70. **turbinata.** Stem erect, somewhat rough. L. very finely spinuloso-ciliate. Root L. spatulate; upper lanceolate or linear. Cal. of Fruit turbinate. Teeth obtuse. Pet. 2-lobed, crested. Segments obovato-linear. Stalk not half so long as obovate capsule. Caps. turbinate when open. **a.** 4, 5. *Corn.* Delia Serradifalco and Caltanisetta in Sic.

71. **clandestina.** Jacq. Erect, slender, much branched. Lower L. oblong, obtuse; upper lanceolate. Pan. lax. Cal. ventricose. Pet. erect, cloven. Caps. somewhat wrinkled, nearly sessile. **a.** 6, 7. *Corn.* w. Fr. lower Sty. Trieste.

The two following I do not know where to place:—

72. **calycina.** "Stem simple, erect, rough, viscid at top. L. lineari-lanceolate, hairless, rough. Margin serrulato-ciliate. Cal. very long, club-shaped, on very short stalk. Cal. and stalks with viscid hairs. Pet. *yellow*, cloven, crested; the Claw as long as the calyx. **p.** 6, 7. *Open hills.* Caltavuturo, Sic."—GUSS. *from Presl.*

73. **Kaulfussii.** "Quite smooth. Root fusiform. Stem nearly simple. Root L. oblong. Stem L. ovato-lanceolate. Fl. panicled. Cal. club-shaped. Pet. with long claws and an acute lamina. **p.** Polnitz, near Clagenfurth."—DC.

112. LYCHNIS. L

A. *Capsule splitting into 10 Teeth. Flowers diœcious.*

1. **vespertina.** Sibt Pan. dichotomous. L. ovate. Teeth of Cal. of first Fl. lineari-lanceolate. Pet. cloven. Teeth of Caps. porrect. **b.** 6–8. *Banks.* ✓

2. **diurna.** Sibt Pan. dichotomous. L. ovate. Teeth of Cal. of first Fl. triangular. Pet. cloven. Teeth of Caps. recurved. **b.** 5, 6. ✓ *Shady banks.*

B. *Capsule splitting into 5 Teeth.*

i. 5-*celled at the Base.*

3. **læta.** Ait Fl. solitary. Cal. 10-nerved; in fruit 10-edged. Teeth acute. Pet. cloven. L. lineari-lanceolate; lowest oblongo-spatulate. **a.** 4, 5. *Sand.* La Teste. Sard. Cors. an. round ✓

4. **alpina.** L Fl. in heads. Stem not viscid. L. lanceolate, glabrous. Pet. cloven, hardly crowned. Caps. on a short Thecaphore. **a.** 6–8. *Very high, granitic.* Se. Alps. Pyr. ✓

5. **Viscaria.** L Fl. in a raceme-like Pan. Stem viscid below the L. L. lanceolate, glabrous. Pet. emarginate, crowned. Stalk nearly as long as capsule. **p.** 5, 6. *Dry rocky.* Sc. *rare.* s. and m. F. G. ✓

ii. *Capsule* 1-*celled.*

6. **Flos-Cuculi.** L Fl. in a dichotomous Pan. Pet. deeply 4-cleft. Segments diverging, linear. Stem L. lineari-lanceolate. **p.** 5, 6. *Moist meadows.* ✓

7.? **pyrenaica.** Berg Smooth. Stem tufted, diffuse. Fl. dichotomo-fasciculate, with a Fl. on a long stalk in each fork. Cal. campanulate. Pet. emarginate, appendiculate. L. coriaceous. Root L. spatulate, on long stalks. Stem L. cordate, sessile. **p.** *Rocks.* w. Pyr. ✓

8. **Cœli-Rosa.** Desf Smooth. Stem dichotomous. Fl. solitary, terminal. Cal. 10-ribbed. Teeth very acute. Pet. obcordate, crowned. Caps. stalked. L. linear, acute. **a.** 4, 5. *Barren.* Toul. Cal. Sic.

9. **coronaria.** Lam Cottony, dichotomous. Cal. ✓

✓ + L. Corsica Lois ped. angular
cal. not umbilic. at base anth. oblong

many times shorter than stalk. Teeth short. Pet. crowned, serrate. Caps. sessile. L. elliptic, coriaceous. **p.** ? 6, 7. *Stony.* s. Fr. s. Alps. *rare.*

10. **Flos Jovis.** Lam Cottony. Stem simple. Fl. fasciculate, the stalk shorter than calyx. Teeth of Cal. short. Caps. sessile. L. lineari-lanceolate. **p.** 6, 7. *Open, stony.* s. Alps. Dau. Prov.

11. **Githago.** Lam Hirsute, dichotomous. Fl. on long stalks. Cal. coriaceous. Teeth leafy, longer than tube. L. linear. **a.** 6, 7. *Corn.*

113. VELEZIA. L

1. **rigida.** L Cal. cylindrical, slender, pubescent. Pet. bifid. **a.** 5, 6. *Dry gravelly.* mdt. Fr. It. Sic.

114. DRYPIS. L

1. **spinosa.** L Pet. bipartite. Bracts with 3 teeth on each side. L. subulate, somewhat three-edged, pointed. **p.** 5–7. *Stony.* Istria. Abruzzi. Terracina.

Tribe II. *ALSINEÆ.*

115. ORTEGIA.

1. **dichotoma.** Fl. dichotomo-corymbose, on long stalks. **p.** Giaveno in Pdm. Monte Baldo. ("Floribus brevissimè pedunculatis," BERT.) O. hispanica *is said by DC. to have short Fl.-stalks.*

116. BUFFONIA. L +

X. **tenuifolia.** L Branched from the base. Caps. nearly sessile, shorter than calyx. L. filiform, dilated and connate at base. **a.** 7, 8. *Stony.* s. Fr. Vall. Luc. Nice. Pdm. Apul.

117. GOUFFEIA. Rob et Cast

1. **arenarioides.** Rob & Cast. in DC Branches divaricate. Fl. somewhat corymbose. L. linear, short, deflexed. **a.** 4, 5. *Dry calc.* Marseilles.

118. CHERLERIA. L

1. **sedoides.** L Cespitose. L. 3-edged, somewhat blunt, spreading. Caps. twice as long as calyx. Valves blunt, callous at tip. **p.** 7. *Snowy.*

119. ALSINE. Wahl

A. L. with scariose Stipules. *Lepigonium* of Koch. Sp. 1–7.

B. L. without Stipules.

i. L. ovate or lanceolate. Sp. 8–12.

ii. L. narrow, with a single nerve or none. Sp. 13–16.

iii. L. narrow, 3-nerved.

a. Sepals with three or more nerves. Sp. 17–26.

b. Sepals with a single nerve between two green stripes. Sp. 27–29.

A. *L. linear. Stipules scariose.* Lepigonium *of Koch.*

1. **segetalis.** L Smooth. Stem erect, much branched. L. filiform, finely cuspidate. Sepals scariose, marked with a green line, exceeding petals. Fr.-stalks deflexed. Seeds muricate. **a.** 6–8. *Sandy.* Fr. Ger.

2. **rubra.** Wahl Hairy, prostrate. L. lineari-filiform, bristle pointed, *shorter than joints of stem.* Sepals lanceolate, obtuse within the scariose margin. Caps. about equal to calyx. Seeds rugose, angular, without a border. **a.** 7, 8. *Sand and gravel.*

3. **radicans.** "Perennial, smooth, creeping. L. semicylindrical, somewhat longer than joints of stem. Sepals lineari-lanceolate, acute, hardly scariose on the margin. Fr.-stalk deflexed. Caps. as long as calyx. Seeds somewhat pyriform, compressed. **p.** 6, 7. *Sandy mountain pastures.* Ætna. Madonie."—GUSS.

4. **diandra.** "Smooth. Stem ascending or erect, ending in a trichotomous panicle. L. lineari-filiform, semiterete. (Upper Stip. leafless, bract-like, BERT.) Sepals lanceolate. Margin scariose. Fr.-stalk erect. Seeds somewhat pyriform, angular, rugose, without a border. **a.** 4, 5. *Salt clay.* Sicily."—GUSS. *Bertoloni joins both these to* A. rubra.

5. **macrorhiza.** Gr. & G. Root woody. Stems prostrate. Joints short. L. fleshy, somewhat flattened, lineari-lanceolate. Stip. broadly ovate. Caps. about equalling calyx. Seeds reniformi-subrotund, granulate. **w.** 6, 7. Is. Tavolara near Sardinia. Is. Lavezzi near Cors. Bonifacio. *Bert. finds no margin to the seeds. Moris sees a broad one.*

6. **marina.** M&K Prostrate. L. semicylindrical, pointless, as long as joints of stem. Sepals lanceolate, somewhat obtuse, scariose on margin. *Fr.-stalk deflexed.* Caps. exceeding calyx. Seeds compressed, smooth, mostly bordered. **a.** 6, 7. *Salt pastures.*

7. **salina.** Fries L. semicylindrical, pointless, exceeding joints of stem. Stip. membranous,

+ B. macrosperma Gay sep. 5 nerved. prolonged to summit st. 4 sty. v. sh. seeds

B. tenuifolia L sep. 5 nerves. confluent before summit st. 2–3 st. sh. seeds

B. perennis. sep 5 nerved. prolonged to summit st. 8 st. long sheathing. Caps. oblong, exceeding calyx. Seeds compressed, angular, roughish. **a.** 6, 8. *Salt marshes.* Westph. Boh."—DC.

The seeds are said to be sometimes bordered. It is probably not distinct from A. marina. *Koch does not notice it.* A. heterosperma *of Guss.* (*Suppl.* i. 129) *appears also to belong to the same species.*

B. *No Stipules.*

i. *L. not linear, or subulate.*

Wahl

✓ 8. **peploides.** Prostrate, smooth. L. sessile, ovate, acute, 1-nerved, fleshy, smooth. Fl. solitary, on short stalks. Caps. exceeding calyx. Seeds large, with an oblong depression. **p.** 6, 7. *Sandy shores* of Ocean.

9. **procumbens.** Prostrate, glanduloso-pubescent. L. lanceolate, somewhat fleshy. Fl. panicled. Sepals somewhat obtuse, about equalling corolla. Caps. equalling calyx. Seeds small, reniform. **p.** 4–7. *Sandy shores.* s. It. Sic. Sar.

Mvk

10. **aretioides.** Tufted. L. oblongo-lanceolate, obtuse, mucronulate, 3-nerved, quite smooth. Fl. solitary, sessile, terminal. Sepals 4. Stamens 8. **p.** 6, 7. *Very high rocks.* e. Alps. Prov. Dauph.

Fenzl

11. **cerastiifolia.** Tufted, somewhat woody. L. ovato-lanceolate, 3-nerved, pubescent. Stalks 1-flowered, terminal, piloso-glandulose. Sepals lanceolate, somewhat obtuse, nerved, shorter than petals. Caps. ovate, hardly exceeding calyx. **p.** *Clefts of rocks.* Pyr.

Mvk

12. **lanceolata.** Tufted. L. lanceolate, rounded at base. Stalks 1–3-flowered, terminal. Sepals lanceolate, usually 5-nerved, as long as petals. Seeds crowned! **p.** 7, 8. *Very high, rocks.* s. Alps.

ii. *L. very narrow, with one or no nerve.*

Wahl

✓ 13. **stricta.** Prostrate, with erect, nearly leafless flowering-stems. L. filiform, semiterete, nerveless. Fl.-stalks about 3, terminal, very long. Sepals 3-nerved when dry, ovato-lanceolate, about equalling petals. **p.** 6–8. *Peaty, not very wet.* Salzb. Upper Bav. Sw. Teesdale.

Walh

? ✓ 14. **biflora.** Tufted. Branches 1–2-flowered. L. narrow linear, nerveless, pointless, somewhat convex below. Sepals linear, 3-nerved, very obtuse, hooded. Pet. half as long again as calyx and capsule. Seeds finely dotted. **p.** *Snowy.* Glaciers of Panerosaz near Bex and on the Fouly. *Somewhat resembles* Mœhringia muscosa.

Ar. striata L. Wahl

15. **laricifolia.** Tufted. Stalks ascending, 1- or many-flowered. L. lineari-subulate, nerveless. Sepals lineari-oblong, very obtuse, 3-nerved. Pet. twice as long as calyx. **p.** 7, 8. *High, dry pastures.* Alps. Apen. ✓

Bauhinorum Gay

16. **liniflora.** Gaud Stem twisting, woody at base. L. filiform. Pan. generally trifid, hirsuto-viscid. Sep. oblong, obtuse, 3-nerved, shorter than flower and than rostrate capsule. **w.** 7, 8. *Mountains.* Carr. Parma. Trent. ✓

iii. *L. narrow, 3-nerved; at least when dry.*

a. *Sepals with 3 or more nerves.*

17. **Arduini.** Woody, downy, erect. L. rigid, lanceolato-linear. Pan. corymbose, few-flowered. Sepals many-nerved. Seeds crested on the back! **w.** 7–9. Apen.

Wal

18. **recurva.** Tufted. Fl.-stalks ascending. L. lineari-subulate, 3-nerved. Sepals ovato-lanceolate; outer 5–7-nerved; about as long as oval, attenuate petals. **p.** 7, 8. *Very high, open.* Sw. Tyr. marit. Alps. Pyr. ✓

Fröl

19. **sedoides.** Much branched. Branches tufted, fastigiate. L. lanceolato-linear, quite smooth. Fl.-stalks solitary or in pairs, about as long as calyx. Sepals ovate, acute, 3-nerved, exceeding calyx. **p.** *Very high.* Algau. *The L. and Fl.-stalks are much shorter than in* A. verna. *Styles and Valves* 3, 4, *or* 5.

Wahl

20. **rubella.** Tufted. L. linear, (not at all subulate,) (lineari-subulate, Hooker) strongly 3-nerved. Stalks 1-flowered. Bracts ovate. Sepals ovato-lanceolate, acute, 3-nerved, exceeding petals. Styles and valves of Caps. 3–5. **p.** 7, 8. *Very high.* Se. *very rare.* ✓

Mvk.

21. **austriaca.** Prostrate, much branched. Flowering-stem naked upwards, erect, 2-flowered. Stalks very long, *downy*. L. narrow linear, veinless. Sepals lanceolate, with 3 parallel nerves, half as long as petals, shorter than capsule. **p.** 7, 8. *High.* e. Alps. v 05-77 ? [illegible] ✓

Mvk

22. **Villarsii.** Procumbent, much branched. Flowering-stem erect, 3–7-flowered. Stalks pubescent. L. narrow linear, often with remote veins. Sepals lanceolate, acute, with 3 arched nerves, half as long as petals, equalling capsule. **p.** 7, 8. *High.* Mte. Rosa. Carinthia. ✓

Jacq

23. **verna.** Tufted. L. lineari-subulate, acute. Sepals ovato-lanceolate, acute, 3-nerved, shorter than ovate, clawed petals. Caps. cylindrical. **p.** *Stony pastures.* ✓

Wal

24. **Gerardi.** "Erect, branched. L. lineari-subulate (somewhat obtuse, Bab.). Fl.-stalks

v. 7·23

in pairs, terminal, 1-flowered. Sepals acuminate, 3-nerved. Margin membranous. **p.** *Barren, high pastures.* Alps of Dau. and Prov." —DC. *Bab. unites this to* verna.

25. **hispida.** Tufted, erect, hairy. L. subulate, hispid beneath, obscurely striate. Pan. dichotomous. Sepals hispid, hardly striate, shorter than petals. Caps. subglobose, hardly exceeding calyx. **p.** 6. Montp. Narb. *Has the appearance of a Spergula.*

26. **tenuifolia.** Wahl Stem erect, dichotomous. L. subulate. Fl. fascicled. Stalks many times longer than calyx. Sepals lanceolato-subulate, 3-nerved. Margin scariose. Pet. oval, attenuate, shorter than sepals. **a.** 6–8. *Walls, fields, &c. occ.*

b. *Sepals with a single nerve between two green stripes.*

27. **setacea.** Wulf Tufted. Flowering-stalk ascending, panicled. L. subulato-setaceous. Fl.-stalks all longer than calyx. Sepals ovate, acute, papery, with a green 1-nerved dorsal stripe. Pet. oval, somewhat longer than calyx. **p.** 7, 8. *Stony.* Fontbl. G. *rare.*

28. **rostrata.** Pers Tufted. Flowering-stalks ascending. Branches fasciculato-corymbose. L. subulato-setaceous. Most Fl.-stalks about equalling or shorter than calyx. Sepals lanceolate, finely acute, papery, with a 1-nerved green dorsal stripe. Pet. oblong, about equalling calyx. **p.** 7, 8. *Clefts of mountain rocks.* Vall. Furea.

Jacquini Rch

29. **fastigiata.** Stems ascending, straight, branched in upper part. L. subulato-setaceous. Fl.-stalk shorter than bract. Sepals unequal, lanceolato-subulate, finely acute, papery, with a 1-nerved green dorsal stripe, three times as long as petals. **a.** 7, 8. *Dry sandy.* s. G. s. Fr. It.

120. ARENARIA. L

A. *L. lanceolate or broader, 1-nerved.*

i. *Sepals half as long again as corolla, acuminate, 3-nerved.*

1. **Marschlinsii.** Koch Stems ascending, dichotomous, panicled. L. ovate, acuminate, sessile; lowermost attenuate into short stalk. Inner Sepals with a scariose border, half as wide as the herbaceous part. **a.** 7, 8. *Very high.* Splügen. Engaddi. Tyrol.

2. **serpyllifolia.** L Stems ascending, dichotomous, panicled. L. ovate, acuminate, sessile; lowermost attenuate into short stalk. Inner Sepals with a scariose border as wide as the herbaceous part. **a.** 6. *Fields and uncult.* ✓

ii. *Petals longer than calyx.* modesta

3. **balearica.** L Creeping, *spreading over the rocks like a moss.* L. subrotund, apiculate, with scattered hairs on the edge, hafted. Stalks 1-flowered, long, terminal. Sepals elliptic, nerveless. **p.** 5, 6. Cors. Sard.

4. **biflora.** L Stems prostrate, branched, somewhat flagelliform. L. oval or subrotund, nearly sessile, obtuse, ciliate at base. Branches short, 1–2-flowered. Sepals ovate, acute, 1-nerved, shorter than petals, as long as capsules. **p.** 7, 8. *Very high, moist.* Alps. *rare. According to Duby the Capsule is 3-valved. Styles* 2–5. ✓

5. **ciliata.** L Stem tufted, prostrate. L. elliptic or obovato-lanceolate, ciliate. Fl. terminal. Sepals with appearance of nerves when dry. **p.** 7, 8. *High stony.* Alps. Auv. Pyr. Apen. Ireland. ✓

ligericina

6. **Salzmanni.** "Villous. Stem much branched, flaccid. L. oblongo-lanceolate, acute, ciliate at base. Fl. panicled. Sepals ovato-lanceolate, acuminate, 3-nerved, exceeding capsule. **p.** 5. *Rocks.* Trapani. *very rare.*"—Guss.

7. **cinerea.** DC "Hoary. L. ovato-lanceolate, acute, ciliate; upper distant, lanceolate. Fl. in a dichotomous panicle, on long stalks. Sepals lanceolate, acute, somewhat keeled, equalling capsule. Valves of Caps. callous. **p.** 6. *Stony.* Prov."—Duby.

8. **norvegica.** Gun Stems tufted, procumbent. Branches 1–2-flowered. L. spatulate, not ciliate. Sepals ovate, somewhat acute, obscurely 3-nerved, nearly as long as petals. Caps. ovoideo-globose. **p.** 7, 8. *On a hill of Serpentine.* Unst, Shetland. ✓

9. **purpurascens.** Ram Tufted, decumbent. Branches erect, 2–3-flowered. L. ovato-lanceolate, acute, sessile, minutely denticulato-ciliate. Sepals lanceolate, very acute, smooth, 3-nerved. Caps. cylindrical, half as long again as calyx. **p.** 8. *Very high.* Pyr. ✓

10. **montana.** L Pubescent, barren. Stems very long, procumbent. L. oblongo-lanceolate. Stalks 1-flowered, long, terminal; of Fr. nodding. Sepals ovate, acute, 1-nerved. Caps. ovato-globose. **p.** 5. *Sandy.* w. Fr. ✓

B. *L. lanceolato-subulate or linear, 1-nerved.*

11. **grandiflora.** All Tufted. Flowering-stems ascending, 1–2-flowered. Edges of L. ✓

rolled in, giving the appearance of 3 nerves. Sepals ovato-lanceolate, acuminate, 1-nerved. **p.** 5–7. *Stony mountains.* m. and s. Eur.

✓ β. *triflora.* 3–5-flowered. L. somewhat broader.

contraversa Boiss Gay

✓ 12. **conimbrensis.** Tufted. Flowering-stems erect, panicled. Branches many-flowered. L. linear, acute, ciliate at base. Sepals ovali-oblong, acute, obscurely 3-nerved, ciliate at base. **b.** 6, 7. *Calc. stony.* Cher.—Boreau.

C. *L. 3-edged, having two strong marginal Ribs, and a Midrib, which does not show on the upper surface.*

✓ 13. **tetraquetra.** L L. ovato-lanceolate, squarrose, with a membranous margin, ciliate at base; lower in four rows. **w.** 6. *Stony hills.* mdt. Fr. Lig.

121. STELLARIA. L

A. *Columella long linear. Capsule opening only at the top.*

✓ 1. **viscida.** Marsh Viscoso-pubescent. Lower L. spatulate, stalked; upper linear. **a.** 5, 6. *Low mws.* Nantes. Sil. ober Baden. Metz.

✓ 2. **cerastoides.** L Stem with a hairy line. L. sessile; lower lanceolate, obtuse; uppermost somewhat ovate, acute, sessile. Caps. exceeding calyx. **p.** 7. 8. *High moist.* Sc. Alps. Pyr.

β. *nivalis.* L. clothed with long hairs.

3. **saxifraga.** Spr Tufted, pubescent. L. ovate, acute, sessile. Caps. exceeding calyx. **p.** 7, 8. *High.* Pdm. Apen. Sard.

ii. *Capsule opening to the middle.*

✓ 4. **nemorum.** L Upper part of stem villous. L. stalked, cordate, acuminate; those on the branches sessile. **p.** 5–7. *Moist woods.*

B. *Columella very short.*

i. *Lower L. stalked.*

5. **latifolia.** DC Stem somewhat rooting at base. Lower L. sub-cordate, stalked; upper sessile. Pet. shorter than calyx. Fruit-stalk reflexed. Seeds disciform, rugose. **a.** 7, 8. *Wet.* Mtp.

✓ 6. **media.** Vill Stems diffuse, with a hairy line. Lower L. ovate; upper elliptic or lanceolate. *Stalk of Fl. hardly exceeding L. Stamens* 2–5. Fr.-stalk deflexed. Seeds somewhat reniform, rugose. **a.** 4–7. *Uncult.*

β. *grandiflora,* Ten. Stalk of Fl. twice L. Stamens 10. Seeds disciform, tubercled. *occ.*

7. **bulbosa.** Wul Rhizoma horizontal, filiform, knotted! L. elliptic, acute. Fr.-stalks arched downwards. **p.** 4, 5. *Oak woods.* Laybach in Carn. and Tanzelsdorf in Sty.

ii. *All L. sessile, rough on margin.*

8. **holostea.** L Stem 4-edged, weak, ascending. L. lanceolate, with long acumen. ✓ Bracts leaf-like. Sepals nerveless, half as long as petals. **p.** 5. *Hedges and thickets.*

9. **scapigera.** Stem hardly longer than Fl.-stalks. L. lineari-lanceolate. Sepals 3-nerved, lanceolate, as long as petals. Bracts scariose. **p.** 6. *High wet.* Loch Nevis, Inverness-shire.

10. **friesiana.** Ser. Stem diffuse, 4-edged, rough in upper part. L. linear. Bracts scariose. ✓ Sepals nerveless; when fresh equalling petals. **p.** 7–9. *Grassy.* Gesenpe in Riesengebirge. Luxemburg.

iii. *All L. sessile. Margin smooth.*

11. **graminea.** L Stem diffuse, 4-edged. L. glabrous, ciliate at base. Bracts scariose, ✓ ciliate. Sepals 3-nerved, equalling petals. **p.** 5, 6. *Dry thickets and heaths.*

12. **glauca.** With Stem erect, weak, 4-edged. L. lineari-lanceolate, acute, quite hairless ✓ Bracts scariose. Margin hairless. Sepals 3-nerved, shorter than petals. **p.** 5–7. *Boggy mws. and ponds, occ. Not in Italy.*

13. **uliginosa.** Murr Stem diffuse, 4-edged. L. oblongo-lanceolate, ciliate at base. Bracts ✓ scariose. Margin hairless. Sepals 3-nerved. Pet. bipartite, shorter than calyx. **a.** 6, 7. *Springs and rills.*

14. **crassifolia.** Ehrh Stem diffuse, 4-edged. L. oblongo-lanceolate, quite hairless. Bracts ✓ leaf-like. Sepals somewhat 3-nerved at base. Pet. bipartite, exceeding calyx. **p.** ? 7, 8. *Boggy meadows.* n. G.

122. HOLOSTEUM. L

1. **umbellatum.** L Root L. elliptic, glaucous, smooth. Fl. in umbels. Stalks deflexed after flowering. **a.** 4. *Walls and dry fields. Rare in Eng.* ✓

123. MOEHRINGIA. L

A. *Stamens* 8. *Petals* 4.

1. **muscosa.** L L. flat, linear, very narrow. ✓

Divisions of Cal. lanceolate, acute, flat. **p.** 6, 7. *Shady rocks, among mountains.*

2. **sedifolia.** L. convex on both sides, short, lineari-lanceolate, keeled. **p.** 6. Col di Tende.

3. **papulosa.** L. fleshy, lineari-spatulate, papillose. **p.** 5. Furlo. Apen.

& [illegible]. & [illegible]

B. *Stamens* 10. *Petals* 5.

4. **Ponæ.** Fenzl L. linear, obtuse, fleshy, nerveless, smooth, with a short mucro. Stems tufted. Stalks about 2-flowered, terminal. Sepals obtuse, 3-nerved, shorter than petals. Caps. 4–7 valved. **p.** 6, 7. *Rocks.* Tyrol. Monte Baldo.

5. **polygonoides.** M & K L. lineari-filiform, somewhat fleshy, nerveless. Stems procumbent. Stalks 1- or more flowered, lateral. Sepals obtuse, 3-nerved, shorter than petals. (Caps. 3-valved, Bert.) **p.** 6, 7. *Stony pastures.* Alps.

6. **villosa.** Fenzl Stems ascending. L. lineari-lanceolate, acute, nerveless; lowest much smaller, elliptic, tapering into a stalk shorter than L. Stalks 1–3-flowered, reflexed after flowering. Sepals acute, nerveless, shorter than petals. **p.** 6–8. *Mns.* Poresen above Zarz, Carn.

7. **diversifolia.** Dill L. lineari-lanceolate; lowest ovate, acute, tapering into stalks two or three times as long as L. Stalks 1–3-flowered, terminal, porrect after flowering. Sepals ovate, 1-nerved; outer acute; inner obtuse, shorter than petals. **p.** 6, 7. *Shady calc. rocks.* Sty. Carn.

8. **trinervia.** Clair All L. ovate, acute, 3-nerved; lower on stalks as long as L. Sepals acute, 3-nerved, longer than petals. **a.** 5, 6. *Shady banks.*

5-andria

124. SAGINA. L

1. **ciliata.** Fries Diffuse. Fr. at first cernuous, afterwards erect. L. linear, awned, ciliate at base. Two outer Sepals acuminato-mucronate. **a.** 6, 7. *Fields, very rare.* Bingen. Luxemburg. Westph. Sax.

2. **bryoides.** Frölich Creeping. Fr. at first cernuous, afterwards erect. L. linear, mucronulate, finely denticulato-ciliate. Sepals obtuse, pointless. **a.** *Rotten wood* in the Valley. Syn near Steeg in Tyrol.

3. **procumbens.** L Procumbent. Fr. at first cernuous, afterwards erect. L. linear, mucronulate, quite hairless. Sepals obtuse, pointless, exceeding petals. **a.** 5–8. *Walls and dry.*

4. **maritima.** Don Fr. always erect. L. lanceolate, very short, quite hairless. Sepals obtuse, pointless. Pet. 0. **a.** 5–8. *Shore.* Br. G. w. Fr. Sard. Cors. ✓

5. **apetala.** L Nearly erect. Fr. always erect. L. linear, bristle-pointed, ciliate. Sepals spreading in the Fr.; two outer somewhat cuspidate. **a.** 5, 6. *Barren.* ✓

6. **patula.** Stem with spreading branches from the base. Fr. slightly nodding, afterwards erect. L. linear subulate, bristle-pointed. Base of Cal. and upper part of Stalk covered with glandular hairs. Cal. of Fr. erect. **a.** *Fields.* Quincieux on the Rhone. —Jordan. is 1. ✓

125. SPERGULA.

i. *L. whorled, stipulate. Seeds winged.*

1. **sativa.** Stamens 10. Seeds large, reniformi-subrotund, not tubercled, but finely granulate under a high power. Crest narrow; "no peripherie circle by the crest." **a.** 4, 5. Canton of Tessin.—Bert.

2. **arvensis.** L Stamens 10. Seeds much smaller than in the last, thick, lenticular, irregularly sprinkled with pale dots; margin very narrow. **a.** 5–7. *Fields.* ✓

3. **pentandra.** L Stamens usually 5. Seeds compressed, with a broad radiating margin, and surrounded by a ring of minute, white tubercles. **a.** 4–6. *Fields.* ✓

ii. *L. opposite. Stipules* 0. *Seeds without wings, reniform.*

4. **nodosa.** L L. lineari-filiform; upper in bundles. Fl. and Fr. erect. Pet. twice as long as calyx. **p.** 7, 8. *Moist sand or peat.* n. and m. Eur. ✓

5. **saginoides.** L Creeping. L. linear, with short mucro. Fl.-stalks solitary, very long, smooth. Young Fr. cernuous; afterwards erect. *Pet. and Sepals obtuse, about equal.* **p.** 6. *Mountains, high.* ✓

6. **subulata.** Swartz Creeping, cespitose, somewhat hairy. L. linear, pointed, rigid, curved, (fringed, Sm.) Fl.-stalks solitary, very long, somewhat hairy. Pet. and Sepals obtuse, about equal. **p.** 7, 8. *Sandy heaths.* ✓

7. **pilifera.** DC Stems tufted, decumbent. L. filiformi-subulate, with a long acumen. Fl.-

stalks long. Pet. twice as long as calyx. **w.** 6, 7. *High mns.* Cors. Sard. Ætna. v of S. G. r G.

8. **glabra.** Rch Prostrate, creeping. L. lineari-filiform, mucronulate. Stalks of Fl.-bud nodding; of Fr. erect. Pet. 5, twice as long as calyx. **p.** 6, 7. *Shady mns.* s. e. Fr. Cors. n. It. s. Tyrol.

126. MŒNCHIA. Ehrh

1. **erecta.** Sm Anthers 4. Styles recurved. Pet. shorter than calyx. **a.** 4, 5. *Dry pastures.* ✓

2. **mantica.** Bart Anthers 8–10. Styles straight. Pet. twice as long as calyx. **a.** 5. *Grassy.* Carn. s. Tyr. it. Sw.

Koch mentions a Mœnchia octandra *as growing in the south of Europe, but I have met with no description.*

127. CERASTIUM. L

A. Teeth of Caps. in 5 pairs. Sp. 1.

B. Teeth of Caps. equidistant. Plant without barren shoots.

- **i.** Pet. not longer, or hardly longer, than sepals.
  - **a.** Sepals hairy to the top. Bracts leaf-like. Sp. 2–6.
  - **b.** Points of Sepals scariose, hairless. Sp. 7–13.
- **ii.** Pet. twice as long as sepals. Sp. 14, 15.

C. Caps. curved. Teeth straight, equidistant. Plant perennial, with barren shoots. Sp. 16–22.

D. Caps. straight. Teeth closely rolled back. Sp. 23.

A. *Teeth of Capsule in 5 pairs.*

1. **aquaticum.** L Pet. bipartite. L. cordate, acuminate; those of barren shoots stalked. Bracts leaf-like. **p.** 6–8. *Wet banks and thickets.* ✓

B. *Teeth of Capsule equidistant, straight. Capsule usually curved. Plant without arren shoots.*

i. *Petals not longer, or hardly longer, than sepals.*

a. *Sepals hairy to the top. Bracts leaf-like.*

2. **glomeratum.** Thuill Pet. not longer than calyx. Sepals lanceolate, acute, (bearded, Godr.,) as long as stalk. Bracts leaf-like. L. broadly oval or ovate. **a.** 5–8. *Fields and banks. A slender Var. without petals has been found at Reigate: perhaps distinct.* ✓

3. **illyricum.** Ard Pet. not longer than calyx. Sepals everywhere villous, as long as stalk. Hairs spreading. Bracts leaf-like. L. oval, acute. Pan. few-flowered. Upper part of stem with deflexed hairs. **a.** 4, 5. Corbara, Cors. —Bert.

4. **androsaceum.** Ser Dwarf, very hairy. Sepals linear, very acute, three times as long as ovato-lanceolate, obtuse petals. Fl. about 3, in an involucrate head. Caps. somewhat shorter than calyx. **a.** *Roadsides.* Cors. is 3 G.

5. **siculum.** "Villoso-hirsute; upper part viscid. Pentandrous. Branches approximate, ascending, dichotomous. Upper L. oval. Bracts not scariose. Sepals acute, scariose on one side, exceeding the cloven petals. Caps. rather shorter than the lower stalks, twice as long as the upper and as calyx; a little curved. **a.** 3, 4. *Sandy fields.* Sic."—Guss.

6. **brachypetalum.** Desportes Sepals acute, as long as petals, half or one-third as long as stalk. Bracts leaf-like. Stem ascending. L. oblong or oval. Caps. nodding. **a.** 5, 6. *Barren grassy.* Fr. G. It. ✓

b. *Point of Sepals scariose, hairless.*

7. **atrovirens.** Bab Sepals usually 4, lanceolate, acute, with narrow scariose margin; not half as long as stalk, longer than petals. Stamens 4, 5. Bracts leaf-like. L. ovate or oblong, somewhat acute. Caps. nearly erect, longer than calyx. **a.** 6, 7. *Barren.*—Bab. *Babington attributes a scariose margin to the bracts, which I do not find.* Rioni

8. **tetrandrum.** Curt Sepals lanceolate, acuminate, with very broad scariose margin, and a central, nearly excurrent, herbaceous line; shorter than stalk, not longer than petals, shorter than reflexed capsule. Stamens 4, 5. Bracts ovate or nearly round, leaf-like. L. elliptic-oblong; upper nearly orbicular. **a.** 5. Tynemouth. Shetland. ✓

9. **pentandrum.** Morris "Erect, somewhat hirsute; upper part viscid. Pentandrous. Bracts not scariose; these and Cal. glanduloso-pubescent. Lower Fr.-stalks three or four lines long, at last refracted. Sepals scariose at top, denticulate, exceeding the petals, somewhat shorter than capsule. **a.** 3, 4. *Sandy shores.* Sic."—Guss. is 139 r G.

10. **glutinosum.** Fries "Sepals and upper Bracts with a scariose margin, and a central, excurrent, herbaceous line; lower Bracts herbaceous. Stem erect or ascending. L. oblong and ovate; lower narrowed into haft. Upper branches ✓

of Pan. crowded. Fr.-stalks spreading horizontally, two or three times as long as calyx. Pet. about as long as calyx. **a.** 4, 5. *Fields and dry pastures. occ.* G."—Koch. "Distinguished from *C. triviale* by the seeds, smooth except on the margin."—Godr. *from* Fries.

11. **triviale.** Link Sepals and Bracts scariose on margin. Pet. about as long as calyx. Lower Fr.-stalks two or three times as long as calyx, nearly erect. Lateral stems often rooting at the base. L. oblong or ovate; lower attenuate. **a.** and **b.** 5–8. *Uncult.*

β. *holosteoides.* Nearly smooth. Sides of Stems alternately pubescent.

I cannot make out on what characters M. Godron means to found his C. alsinoides, *which seems to differ from* triviale *only in the want of beard to the sepal. Perhaps his var.* α. obscurum *may be the* atrovirens *of Bab., while his* β. pallens *may go to* triviale.

12. **pumilum.** Curt Sepals lanceolate, acute, with a narrow scariose margin, nearly as long as stalk; as long as petals. Stalk of Fr. reflexed. Stamens 5. Bracts with a very narrow membranous margin. L. ovato-lanceolate.—Bab. **a.** 5. Croydon. Nevers. Bourges.

13. **semidecandrum** L All the Bracts and Sepals very scariose, eroso-denticulate. Pan. umbel-like at top. Pet. hardly so long as calyx. Fr.-stalk two to three times as long as calyx, deflexed, afterwards erect. **a.** 3–5. *Dry banks and walls.*

ii. *Petals twice as long as sepals.*

14. **campanulatum.** Vill Lower Bracts herbaceous; *the third series has sometimes a narrow scariose margin.* Pet. twice as long as calyx. Fr.-stalk twice as long as calyx. L. oblong; lower somewhat spatulate. **a.** and **b.** 4, 5. *Barren pastures.* Paris. Vall. It.

15. **sylvaticum.** Waldst Lower Bracts herbaceous; upper with narrow scariose margin. Pet. twice as long as calyx. Lateral stems rooting. Lower L. ovate, acute, abruptly contracted into stalks; upper lanceolate, acuminate. (C. repens *of Linnæus, according to Bert.*) **b.** 6, 7. *Moist woods.* Mauerbach near Vienna. Trieste. Sty.

C. *Capsule curved. Teeth straight. Root perennial, producing barren shoots. Petals far exceeding calyx.*

16. **glaciale.** Gaud Bracts none, distinguishable from L. Stems numerous, procumbent. Flowering-stems 1-, very rarely 3-flowered. L. elliptic-oblong. **p.** 7. *Very high.* Alps. *The bracts seem never to be wanting, even on the* 1-*flowered stalks of* C. latifolium; *and never to occur in this.*

17. **latifolium.** L Bracts small, thin, herbaceous. Shoots tufted, procumbent. Flowering-stems erect, 1–3-flowered. L. elliptic or lanceolate. **p.** 7, 8. *High mountains.* pyrenaicum

18. **alpinum.** L Bracts somewhat scariose at top. Shoots creeping. Flowering-stems ascending, 1–3-, rarely 7-flowered. Fr.-stalks spreading obliquely. L. elliptic, or lanceolate. **p.** 5–8. *High, stony.*

19. **ovatum.** Hoppe Bracts broadly scariose. Shoots creeping. Flowering-stems ascending, 6–9-flowered. Fr.-stalks pubescent, spreading obliquely. Lower L. lanceolate; upper ovate, acuminate. **p.** 6–8. *High, stony.* Carinthia. Sty. Hallstadt.

20. **arvense.** L Bracts broadly scariose. Shoots creeping. Flowering-stems erect, 7–15-flowered. Cal. nodding. Fr.-stalks pubescent, erect. L. lineari-lanceolate. **p.** 4, 5. *Open hills and banks.*

β. *strictum.* L. smooth, ciliate at base.

γ. *suffruticosum.* Woody at base. L. erect, rigid. Bispeii

repens L

21. **tomentosum.** L Tomentose. Bracts widely scariose, barren. Stems rooting, tufted. Flowering-stems erect, 7–15-flowered. Fr.-stalks erect. Cal. nodding. L. lineari-lanceolate. **p.** 4, 5. *Open, and walls.* Sw. Prov. Guadagnolo. Naples. Sic.

22. **filiforme.** Vest "Stems tufted. L. filiform, 3-edged, fleshy. Sepals lanceolate. Caps. oblong, exceeding calyx, always erect. L.-stalks about as long as calyx. **p.** Upper Styria."—DC. *from* Vest. *Not noticed by* Koch.

D. *Teeth of Capsule revolute.*

23. **grandiflorum.** Waldst Barren shoots rooting. Flowering-stems erect, 7–15-flowered. L. narrow linear, somewhat fleshy, convex beneath. Margin revolute when dry. **p.** 7, 8. The high Schwab in Upper Styria.

Tribe III. *ELATINEÆ.*

128. ELATINE. L

1. **triandra.** Schk Pet. 3, *pink.* Stamens 3. L. opposite, longer than stalks. Fl. sessile. **a.** 9, 10. *Edges of ponds, below the usual level of the water.* Eng. G. *occ.*

DC
2. **hexandra.** Pet. 3. Stamens 6. L. ✓ opposite, longer than stalks. Fl. on short stalks. **a.** 6–8. *With the preceding, but more rare.* G. Pdm. Sic.

Campylosperma [illegible]
3. **major.** Pet. 4. Stamens 8. L. opposite, longer than stalks. Fr.-stalk 2 or 3 times as long as fruit. **a.** 7, 8. *Rice-fields.* Ver.
v of L. Grvg.

4. **Hydropiper.** L Pet. 4, *white.* Stamens ✓ 8. L. opposite, shorter than stalk. Fl. nearly sessile. **a.** 6–8. *Places often covered with water.* Fr. G. Engl. and Irel. *Very rare.*

Guss
5. **macropoda.** Pet. 4, *white.* Stamens 8. L. opposite, spatulate, much shorter than haft. Lower Fl.-stalks much exceeding L. **a.** 3, 4. *Inundated.* Sic. Cors. Sard.

6. **Alsinastrum.** L Pet. 4. Stamens 8. L. in whorls. Fl. axillary, nearly sessile. **a.** 7, 8. ✓ *Ponds, rice-fields.* Fr. G. Ver.

XV. LINEÆ.

Sepals 5, imbricate. Petals convolute. Germen 1. Styles 5.

129. LINUM. L

A. L. alternate.
- **i.** Flowers blue, rarely white.
  - **a.** Sepals without glands, and usually without cilia. Sp. 1–8.
  - **b.** Sepals glanduloso-ciliate. Sp. 9.
- **ii.** Flowers purplish, at least at base.
  - **a.** Sepals ciliate, but without glands. Sp. 10.
  - **b.** Sepals glanduloso-ciliate. Sp. 11–15.
- **iii.** Flowers yellow.
  - **a.** Sepals without glands. Sp. 16.
  - **b.** Sepals glanduloso-ciliate.
    - * L. with a gland on each side of base. Sp. 17–19.
    - ** L. without glands. Sp. 20–24.

B. L. opposite. Flowers white. Sp. 25.

A. *L. alternate.*

i. *Flowers blue, rarely white.*

a. *Sepals without glands, and nearly without cilia.*

1. **narbonense.** L Sepals very acuminate, ✓ twice as long as capsule. Stems smooth, erect. Pan. corymbose. L. lineari-lanceolate. **p.** 5–7. *Dry open hills.* s. Fr. n. It. Adr. G.

2. **usitatissimum.** L Sepals all acute or ✓ acuminate, about as long as capsule. Pet. crenate, about three times as long as calyx. L. lanceolate. Stem erect, solitary. **a.** 6. *Escapes.*

Huds
3. **angustifolium.** Sepals all acute or ✓ acuminate, about as long as capsule. Pet. about twice as long as sepals. Valves of Caps. finely acuminate. L. lineari-lanceolate, 3-nerved, acute. Stems numerous, diffuse. **p.** 6, 7. *Fields and meadows.*

4. **austriacum.** L Sepals ovate; inner very obtuse, hardly as long as capsule. Fr.-stalks decurved. Stems numerous. L. linear, acute, ✓ erect. **p.** 6, 7. *Heaths and banks.* s. e. G. Abr. Lorr.

5. **alpinum.** L Sepals ovate, about two-thirds length of capsule; inner very obtuse. Pan. corymbose, few-flowered. Fr.-stalks erect. Stems numerous. L. lineari-lanceolate, with ✓ pellucid dots; lower shorter, more crowded, and often reflexed. **p.** 6, 7. *Dry mountain pastures.* Alps. Pyr. Abr.

s.l.
6. **Leonii.** Sepals elliptic; outer acuminate, about two-thirds length of capsule; inner obtuse. Fr.-stalks erect. Stems numerous. L. lineari-lanceolate, mucronate; the lower shorter, more crowded, and often reflexed. **p.** 7, 8. *Dry hills.* Lorr.—GODRON.
L of S Grvg.

7. **perenne.** L Sepals ovate, half as long as capsule, their margin scariose, entire; inner very obtuse. Stems numerous, ascending. L. ✓ all acute, not mucronate or dotted. Caps. subglobose. **p.** 6, 7. *Chalky hills.* Eng. Sard. G.

8. **punctatum.** Sepals ovate, acute, half as long as globose capsule. Margin scariose, entire. Stems numerous, decumbent, simple. L. lanceolate, with pellucid dots; the lower crowded, smaller, obtuse, often reflexed. **p.** 5, 6. Nebrodes.

b. *Sepals glanduloso-ciliate.*

9. **siculum.** Sepals ovato-lanceolate, acuminate, 3-nerved. *Pet. three times as long as calyx.* L. lineari-lanceolate, acute, 3-nerved.

Stem solitary. **p.** 5. *Grassy hills.* S. Maria à Gesù. Palermo.—Guss.

ii. *Petals purplish, at least at the base.*

a. *Sepals ciliate, but without glands.*

10. **decumbens.** Sepals subulate, on an ovate base, 3-nerved. Fl. few, corymbose. Pet. three times as long as calyx. Caps. acuminate. Stems tufted. L. linear, 3-nerved; lower acute; upper acuminate. **a.** 4, 5. *Open hills.* Lecce. Sic.

b. *Sepals glanduloso-ciliate.*

11. **tenuifolium.** L Sepals lanceolate, prolonged, exceeding capsule. Stems smooth. L. linear, acuminate, without hairs. Margin rough. Stems branched, diffuse. **w.** 6, 7. *Warm.* m. and s. Eur. *Not in Sic.* ✓

suffruticosum L

C 12. **salsoloides.** Lam Sepals elliptic, prolonged, hardly exceeding capsule. L. linear, acuminate. Margin rough. Stems woody at base, twisted. *Fl. white, purplish at base.* **w.** 6, 7. *Dry.* Prov. Gasc. *Var. of* 11? ✓

13. **hirsutum.** DC Sepals lanceolate, acuminate, exceeding capsule. Stem tomentoso-villous. L. ovato-lanceolate, 3–5-nerved; upper fringed with glandular hairs. **p.** 6, 7. *Uncult. hills.* e. Pyr. Sty. lower Austria. Monte Baldo. Nice. is 14. ✓

14. **viscosum.** L Sepals lanceolate, acuminate, exceeding capsule. Stem villous. Hairs very spreading. L. lanceolate, 3–5-nerved; lower elliptic, hirsute; upper glanduloso-ciliate. **p.** 6–8. *High pastures.* s. Ger. It. ✓

15. **piligerum.** "Sepals linear, hirsute. Styles equalling stamens. Stem terete, nearly simple, erect, covered with white spreading hairs. L. oblongo-lanceolate, somewhat acute, 3-nerved, hirsute. **a.** 4, 5. *Open hills.* Cefalu."—Guss.

iii. *Flowers yellow.*

a. *Sepals without glands.*

16. **nodiflorum.** L Sepals linear, somewhat acuminate, mucronate, as long as petals, two or three times capsule, and much longer than fruit-stalk. Lower L. obovato-lanceolate; upper lanceolate. **a.** 6, 7. *Fields.* Toulon. It. Trieste.

b. *Sepals glanduloso-ciliate.*

* *L. with a gland on each side of base.*

17. **flavum.** L Sepals lanceolate, acuminate, exceeding capsule. Fl. in a lax corymb. Stem sharply prismatic. Lower L. obovato-lanceolate, acute; upper lanceolate, acuminate. **w.** 7. *Dry pastures.* s. e. G.

18. **serrulatum.** Sepals ovate, acute, about equalling capsule. Fl. in a corymbose head. Stem sharply prismatic. Lower L. obovato-lanceolate; upper lanceolate; all acute. **w.** 6, 7. Abr. and Piceno.—Bert.

19. **campanulatum.** L Sepals lineari-lanceolate, acuminate, entire, exceeding capsule. Stem striate. Lower L. obovato-spatulate, very obtuse. **w.** 5, 6. Lig. Monte Gargano. ✓

** *L. without glands.*

20. **strictum.** L Sepals lanceolate, acuminate, much longer than stalk, twice as long as capsule. Fl. crowded. All L. lineari-lanceolate, straight. Margin very rough. **a.** 5, 6. *Dry hills.* s. Eur. ✓

21. **gallicum.** L Sepals lanceolate, acuminate, about equalling stalk, half as long again as capsule. Pan. loosely corymbose. L. lineari-lanceolate. Margin somewhat rough. **a.** 6. *Dry hills.* s. Eur. ✓

22. **aureum.** DC (corymbulosum, Koch.) "Sepals lanceolate, acuminate; point rough on the margin; twice as long as capsule. Branchlets axillary, with some hairs on the inside. L. lineari-lanceolate. Margin rough. Fr.-stalk as long or somewhat longer than capsule. **a.** 6, 7. *Dry uncult.* Adr. Ger."—Koch. v cf. 20 syn 9.

23. **Mulleri.** Sepals ovate, acute. Stalks 1-flowered, about equal to calyx and to capsule. Stem downy, branched below, panicled above. L. 1-nerved, ciliate; lower elliptico-oblong, obtuse; upper lanceolate. Stigma capitate. **w.** 5, 6. *Pastures.* Iglesias in Sard.

24. **maritimum.** L Sepals ovate, with short acumen, about as long as capsule, many times shorter than stalk. Lower L. opposite, elliptic; upper lanceolate, alternate. **p.** 8, 9. s. Fr. It. Trieste. ✓

B. *L. opposite. Flowers white.*

25. **catharticum.** L Sepals elliptic, acuminate, glanduloso-ciliate. Stem forked. Fl. drooping. Lower L. obovate; upper lanceolate. **a.** 7, 8. *Meadows and pastures.* ✓

130. RADIOLA. Gmel

1. **Millegrana.** Gmel **a.** 7, 8. *Moist sand. Not in Italy.* ✓

XVI. MALVACEÆ.

Germens several. Styles united at base. Sepals valvular. Petals convolute. Filaments united into a complete tube.

131. MALOPE. L

✓ 1. **malacoides.** L Stalks 1-flowered, axillary. L. ovate, crenate. Stip. oblongo-linear. **a.** 6. *Dry coast.* Prov. It.

132. MALVA. L

A. Outer Calyx of 2 L.! Sp. 1.

B. Axillary Stalks solitary, exceeding L.-stalk. Sp. 2–5.

C. Axillary Stalks generally solitary, very short. Sp. 6, 7.

D. Axillary Stalks many, longest equalling L.-stalk. Sp. 8–11.

E. Axillary Stalks many, all much shorter than L.-stalk. Sp. 12–21.

A. *Outer Calyx of* 2 *L.!* [In all the other species there are 3.]

✓ 1. **hispanica.** L. semi-orbicular, crenate; uppermost somewhat rhomboid. Stem erect, hairy. **a.** Sic. *Not seen by Gussone.*

B. *Lower Flower-stalks axillary, solitary, exceeding L.-stalk.*

2. **cretica.** Cav Lower L. cordato-subrotund, crenate; upper 3–5-partite. Stem erect. **a.** 5. *Calcareous hills.* Terracina. Sic.

✓ 3. **tournefortiana.** L Root L. 5-partite, trifid or somewhat pinnatifid. Segments linear. Stem decumbent. Hairs few, stellato-fasciculate. **a.** 6. *Coast* of Mdt. Frej. Rous.

✓ 4. **Alcea.** L Root L. cordato-subrotund; upper 5-partite. Segments trifid, inciso-dentate, or pinnatifid, rough with stellato-fasciculate hairs. Outer Sepals ovate, prolonged. Valves of Caps. glabrous, somewhat transversely wrinkled. **p.** 7–9. *Hedges.* m. and s. Eur.

✓ β. *italica.* Outer division of Cal. ovate or elliptic, acuminate.

5. **moschata.** L Root L. cordato-subrotund. Stem L. 5-partite. Segments pinnatifid, incise, or bipinnatifid. Cal. hairy; outer divisions lineari-lanceolate. Valves of Caps. densely hirsute. **p.** 7, 8. *Dry shade.* Mr. Borrer gathered in Somersetshire a variety with the Stem L. also cordato-subrotund. It has propagated itself in his garden as an annual for twenty years without alteration.

C. *Flower-stalks axillary, generally solitary, very short.*

6. **Morenii.** "Stem erect. L. cordato-subrotund, 5-lobed, crenate, hoary beneath. Fruit-stalks nearly solitary. Cal. tomentose; outer divisions ovate, acute. Caps. smooth. *Fl. large.* **p.** 5, 6. Monte Baldo. Trent. &c."—POLL. *Put by DC. as a variety of* M. Alcea.

7. **tomentella.** Prostrate, hoary with stellate pubescence. L. cordato-subrotund, 5-angled, obtuse, dentate. Outer divisions of Cal. oblong, obtuse. **a.** 5. *Fields.* Trapani. —GUSS. *from* PRESL.

D. *Lower stalks axillary, several, unequal; longest as long as L.-stalk.*

8. **ambigua.** Guss Stem ascending. L. crenate; lower cordato-subrotund, somewhat 5–7-lobed; upper ovato-subrotund, acutely palmate. Stip. leaf-like. Pet. three times as long as calyx. Caps. hirsute. **a. b.** 4, 5. *Open fields.* s. Sic. m. sylvestris

9. **polymorpha.** Erect. Lower L. cordato-subrotund, obtusely lobed, crenate; upper truncated at base, acutely 3–5-lobed, dentato-serrate. Stip. leaf-like. Pet. quarter of calyx. Caps. hirsute. *The upper Stipules are sometimes scariose.* **a. b.** 4, 5. *Fields and uncult.* Trapani. Marsale. Pal.

10. **erecta.** Villous, erect, somewhat branched. L. cordato-subrotund, crenato-dentate; upper 5-lobed. Stip. scariose, ciliate. Fl.-stalks 1 or 2, erect, stiff. Pet. three times calyx. Caps. rugulose, tomentose. **a. b.** 4, 5. *Dry fields and uncult.* Pal. &c. Sic. *In the character Gussone says,* "Pedunculis folio æqualibus;" *in the longer description of his Variety* 6, "Pedunculi petiolo sæpiùs breviores."

11. **hirsuta.** Hirsute, erect. L. cordato-peltate, nearly round. Hairs adpressed. Lower L. obtusely lobed, dentato-crenate; uppermost

with acuminate, serrate lobes. Stip. scariose, ciliate. Fr.-stalks 2–6, stiff, spreading. Pct. four times as long as calyx. Caps. somewhat hirsute. **p.** 5, 6. *Woody hills.* Sie.

E. *Axillary Stalks more than* 1; *all much shorter than L.-stalk.*

12. **excelsa.** "Pubescence stellate. Stem erect, much branched. L. semicircular, 5-angular, crenato-dentate; those of branches with about 5 obtuse lobes. Fr.-stalks 3–6, erect. Outer divisions of Cal. ovate. Caps. rugulose, hairless. **a.** 5, 6. *Fields and uncult.* Santa Maria à Gesù. Palermo."—Guss. *from* Presl.

13. **mauritiana.** "Erect. L. thin, 3–5-lobed, obtusely and obliquely serrate; the middle lobe prolonged. L.-stalk pubescent on the upper side only. Fr.-stalk smooth. Outer divisions of Cal. ovate, ribbed. Caps. rugulose, flat on the back. **a.** 7–10. It."—DC.

14. **sylvestris.** Nearly erect. L. with 5–7 acute lobes. Stalks hairy. Stip. scariose. Fr.-stalks erect, hairy (lax, often arched, Guss.). Outer divisions of Cal. elliptico-oblong. Pet. three or four times as long as calyx. Claw very hairy. Caps. pitted. Carpels with a thickened and rounded margin. **b.** 7, 8. *Uncult.*

All

15. **nicæensis.** Stem procumbent (erect, with decumbent branches, Guss.). L. cordato-subrotund, 5–7-lobed. Stip. membranous. Fr.-stalks 2–6. Pct. twice as long as calyx. Claw slightly bearded. Carpels with acute edges, and acute, transverse, irregular wrinkles. **a. b.** 4–6.—Guss. 7–8.—Koch. *Uncult.* s. Eur.

16. **flexuosa.** "Spreading. Stem somewhat flexuose. L. round, dentato-crenate, covered beneath with a stellate pubescence; lower cordate, obtusely 5–7-lobed; upper truncate at base, deeply 5-lobed. Fr.-stalks 1–3, one much the longest. Cor. somewhat longer than calyx. Caps. rugose, toothed on the margin, pubescent. **b. p.** 4, 5. *Neglected pastures.* Milazzo. Favignano. *Resembles* M. parviflora."—Guss.

17. **parviflora.** Diffuse, branched. L. cordato-subrotund. Lobes spreading; upper acutely lobed. Stalks nearly smooth. Fr.-stalks 2–6, irregularly prolonged. Cor. hardly exceeding calyx. Carpels with acute edges, and acute, transverse, irregular wrinkles. **a.** 3, 4. *Uncult.* mdt. Fr. It.

[illegible] Wallm.

18. **borealis.** Stem procumbent. L. cordato-subrotund. Lobes approximate, giving a circular outline to L. (Fr.-stalks bent down, Koch.) Outer divisions of Cal. lineari-lanceolate. Pet. equalling calyx. Carpels with acute edge, and acute, transverse, irregular wrinkles. **a.** 6–9. *Uncult.* n. G.

19. **rotundifolia.** Stem procumbent. L. cordato-subrotund, 5–7-lobed. Fr.-stalks bent down. Outer divisions of Cal. lineari-lanceolate. Pet. twice or three times as long as calyx. Carpels rounded on the back. Surface even, hairy. **a.** 6–9. *Uncult. Not in Sic.*

20. **bivoniana.** "Pubescence stellate. Stem erect, simple. L. cordato-subrotund, obtusely angular, dentate. Stalks smooth underneath. Fr.-stalks 3, deflexed. Outer divisions of Cal. linear, much shorter than inner. Pet. a little longer than calyx. Carpels tomentose. **a.** 5–7. *Fields.* Pal. Cat."—Guss. *from* Presl.

21. **sulcata.** Erect. L. cordate, with five deep, triangular, acute lobes. Cor. hardly exceeding calyx. Carpels rounded on the back, the surface veined. **a.** Llanelly, s. Wales.

133. ALTHÆA.

A. *Outer Calyx* 7–9-*cleft. Carpels convex on back.*

1. **officinalis.** L. cordate or ovate, nearly simple, dentate, soft and downy. Stalks many-flowered, much shorter than L. **p.** 7–9. *Marshes of coast.*

2. **taurinensis.** L. trifid, dentate, soft and downy. Stalks many-flowered, stiff, as long as L. **p.** *Hills.* Turin. *Divisions of Cal. acuminate.*

Pourr.

3. **narbonensis.** Lower L. 5–7-partite; upper trifid, downy. Stalks many-flowered, lax, longer than L. **p.** Narbonne.

4. **cannabina.** L. tomentoso-scaber; lower palmato-partite; middle digitate; uppermost ternate. Lobes narrow, coarsely toothed. Stalks 1–2-flowered, lax, exceeding L. **p.** 7. *Margins and woods.* m. and s. Eur.

5. **hirsuta.** Hispid with spreading hairs. L. cordate; lower reniform, 5-lobed; middle palmate; uppermost tripartite. Stalks 1-flowered, exceeding L. **a.** 6, 7. *Hedges and fields, occ.* m. and s. Eur.

6. **Ludwigii.** "Stellato-villous. L. cordato-subrotund, 5-lobed, dilated upwards, dentate, smooth above. Stalks crowded, 1-flowered, very short. Cor. somewhat exceeding calyx.

Carpels without a border. **a.** *Summer. Sandy fields.* Syracuse."—Guss. *from* Presl.

B. *Outer Calyx 6-cleft. Carpels deeply channeled on back.*

7. **pallida.** WVK Hairy. Stem simple, erect. L. cordate, slightly lobed. Lobes rounded, crenate. Fl. crowded, nearly sessile. Outer calyx about as long as inner. Pet. separate.—Poll. **b.** 6, 7. *Open hills.* Castro di Montoria near Verona. Soos near Vienna.

8. **rosea.** L Stem nearly simple, erect, hirsute. L. cordate, with 5–7 angles, crenate. Fl. nearly sessile, the upper forming a sort of spike. Outer Cal. much shorter than inner. Pet. touching. Claw villous. **b.** 6, 7. Nice.

134. LAVATERA. L

A. *Receptacle expanding above Seeds, and covering them completely.*

✓ 1. **trimestris.** L Herbaceous. L. nearly smooth, cordato-subrotund; uppermost angular. Stalks solitary. **a.** 6–8. *Fields.* Rous. Mars. Nice. Calab. Sic.

2. **hispida.** Shrubby. Stem hispid with fasciculate hairs. L. somewhat hoary, 5-lobed; uppermost 3-lobed, or undivided. Fl. solitary, on short stalks. Outer Cal. tripartite, very large, very hirsute. **p.** 5, 6. *Thickets.* Between Nemi and Genzano. Cal. Sic.

B. *Receptacle not expanding above Seeds.*

i. *Shrubby.*

✓ 3. **Olbia.** L Stem rough. Hairs somewhat fasciculate. L. soft, hoary, 5-lobed; upper 3-lobed; the middle lobe oblong, nearly undivided. Fl. nearly sessile, solitary. **p.** 6. *Hedges and thickets.* Cannes. Hyères. Sic.

4. **unguiculata.** Densely downy. Hairs stellate. Lower L. obtusely 5-lobed; middle acutely 5-lobed; upper hastato-3-lobed. Fl.-stalks solitary, short. Lobes of outer Cal. rounded, with acumen. **p.** 4, 5. *Rocky shores.* Sferracavallo near Palermo. *rare.*—Guss.

5. **maritima.** Gouan Velvety. Hairs stellate. L. subrotund, obtusely angular, crenate. Flower-stalks solitary, somewhat exceeding L.-stalk. **w.** 2–4. *Rocky coasts.* mdt. Fr. Nice.

✓ 6. **arborea.** L Tree-like. L. downy; lower cordato-orbicular, 5–7-lobed; upper acutangular. Stalks axillary, 2–4, 1-flowered, shorter than L.-stalk. Outer Cal. exceeding inner. **sS.** 3. *Rocky coasts.* Cornwall. Belle Isle. Cors. Sic.

7. **agrigentina.** Pubescence viscid. L. undulato-plicate, crenate; lower cordato-orbicular; upper semiorbicular. Fl.-stalks 2–4, as long as L.-stalk. Divisions of inner Cal. acute, longer than outer. *Fl. yellow!* **h.** 4, 5. *Clayey fields.* s. Sic.—Guss.

8. **triloba.** Gouan "L. cordato-orbicular, crenate, downy; upper somewhat 3-lobed. Stip. cordate. Stalks numerous, 1-flowered. Divisions of inner Cal. acuminate. **h.** 6. Coliseum."—Mauri. v. of Gr. y. ✓

ii. *Herbaceous. Hairs mostly stellate.*

9. **punctata.** All Stem rough with points and with stellate hairs. L. somewhat downy; lower cordato-orbicular, acutangular; uppermost serrate, hastate, or entire. Lobes acute. Stalks solitary, 1-flowered, twice as long as L. **a.** 6, 7. *Cult.* It. Prov.

10. **biennis.** Downy. Stem erect. Lower L. cordato-orbicular, obtusely lobed; uppermost 3-lobed, serrate; middle lobe largest, lanceolate, acute. Stalks solitary, 1-flowered, as long as L. **b.** 5, 6. *Cult.* n. Sic.

11. **thuringiaca.** L Downy. Lower L. angular; upper 3-lobed; middle lobe longer, obtuse. Stalks solitary, 1-flowered, exceeding L.-stalk, shorter than L. **p.** 7, 8. *Shady hills.* c. G. ✓

12. **ambigua.** "Stem rough. L. tomentose; lower 5-angular; upper with 3 lanceolate, acute, dentate lobes; the middle lobe twice as long as the others. Stalks solitary, shorter than L. **b.** *Bushy hills.* K. of Nap."—Ten.

13. **sylvestris.** Stem rough. Lower L. cordato-orbicular; middle with 7 obtuse lobes; upper with 5 nearly equal acute lobes. Stalks crowded, 1-flowered, shorter than L.-stalks. Outer Cal. shortest; inner with acuminate divisions. **b.** 3–5. *Grassy shores.* s. It. Sic. ✓

14. **cretica.** L Stem hispid. Lower L. cordato-orbicular; upper truncate at base, acutely 5-angulari-lobate; middle lobe largest. Stalks crowded (1–6), shorter than L.-stalk. Divisions of inner Cal. nervoso-rugose, acuminate. **b.** 3–5. *Uncult. coasts.* s. It. Sic.

135. HIBISCUS.

1. **pentacarpos.** Cells 1-seeded! L. cordato-oblong, somewhat obtuse, angular;

upper somewhat 3-lobed. Stalks 1-flowered, exceeding L.-stalk. Fl. cernuous. Pistils nodding. **p.** 8. *Marshes.* Pietra Santa on the Piave near Friuli.

2. **roseus.** Thore Seeds many. L. cordate, dentate, somewhat 3-lobed. Stalks 1-flowered, with a joining above the middle, detached from L.-stalk. **p.** *Banks* of Adour.

3. **aquaticus.** Seeds many. L. ovate, dentate, somewhat 3-lobed, acuminate, hoary beneath. Stalks 1-flowered, with a joining near the base. **p.** 8. Bientino.

4. **Trionum.** L Seeds many. L. dentate; lower nearly undivided; upper tripartite. Lobes lanceolate; the middle very long. Cal. inflated, membranous, nervose. *Fl. yellow, with a base of dark purple.* **a.** 8, 9. *Cult.* Sic. lower Austria. Styria. *Beds of torrents.* Abruzzi.

136. SIDA. L

1. **Abutilon.** L Carpels 15, truncate, birostrate, hairy, many-seeded. L. subrotundo-cordate, acuminate, dentate, tomentose. Fl.-stalk shorter than L.-stalk. **a.** 8, 9. *Marshes.* Le Vigau. *vineyards, and uncult.* s. side of Alps. Sic. *rare.*

XVII. TILIACEÆ.

Germen 1. Sepals 4 or 5. Æstivation valvular. Petals 4 or 5, a gland at the base of each. Capsule woody, with from 4 to 10 cells. *Trees, with alternate, stipulate L.*

137. TILIA. L

1. **parvifolia.** Ehrh L. smooth above; glaucous, and with tufts of hairs beneath; hardly longer than stalk. Umbels compressed, many-flowered. Fr. subglobose, slightly ribbed, thin and brittle. **T.** 8. *Woody hills.*

β. *intermedia*, Godr. D.C. sp. Fr. larger and woody.

2. **europæa.** L L. with a tuft of hairs at the branching of the veins, otherwise smooth, twice as long as stalk. Cymes many-flowered. Fr. nearly spherical, somewhat ribbed, coriaceous, downy. **l.T.** 7. *Not wild?*

3. **grandifolia.** Ehrh L. downy, woolly at the branching of the veins beneath. Umbels 3-flowered. Fr. nearly spherical, somewhat ribbed. **l.T.** 6, 7. *Woody hills, occ. I have specimens from Vaizelai of a* Tilia *with strongly-ribbed pyriform fruit; and Godron, in the* "Flore de Lorraine," *describes a* T. rubra *with acuminate fruit.*

In the south of Europe we meet with *Citrus* in extended cultivation, belonging to the *Aurantiaceæ;* the L. of which have a joining at the base. The species are—

1. **medica.** With naked L.-stalks and 40 stamens. Fr. oblong. *The sweet Lemon.*

2. **Limonium.** L.-stalk winged. Stamens 35. Fr. oblong. *The common Lemon.*

3. **Aurantium.** L.-stalks nearly naked. Stamens 20. Fr. globose. *Orange.*

4. **vulgaris.** L.-stalks winged. Stamens 20. Fr. globose. *Seville Orange.*

XVIII. HYPERICINEÆ.

Germen 1. Sepals 4, 5, imbricate. Petals convolute. Stamens in sets. Styles 3–5. Fruit of many valves, and generally many cells.

138. HYPERICUM. L

A. Fruit pulpy! Sp. 1.
B. Sepals very unequal. Sp. 2, 3.
C. Sepals nearly equal. No hypogynous scales.
  i. Sepals not fringed. Sp. 4–11.
  ii. Sepals fringed with glands.
    a. Glands nearly sessile. Sp. 12–18.
    b. Glands on stalks, not equal to width of sepals. Sp. 19–22.
    c. Glands on stalks, longer than width of sepals. Sp. 23.
D. Sepals nearly equal. 3 hypogynous scales alternating with sets of stamens. Sp. 24, 25.

A. *Capsule pulpy!*

1. **Androsæmum** L. Styles 3. Divisions of Cal. unequal, quite entire. Stem shrubby, compressed. L. ovate. **w.** 7. *Thickets.*

B. *Divisions of Calyx very unequal.*

2. **calycinum** L. Styles 5. Fl. solitary. Divisions of Cal. obovate, permanently spreading. L. oblong, sessile. Stem branched, shrubby, 4-edged. **w.** 7–9. near Cork. *Woods* above Largs?

✓ 3. **hircinum** L. Styles 3–4. Fl. in cymes. Stalks with 2 bracts. Divisions of Cal. lanceolate, acute. L. ovato-lanceolate, somewhat amplexicaul. Stem branched, winged. **w.** 5. *Moist shade.* Cors. Naples.

C. *Sepals nearly equal. No hypogynous Scales.*

i. *Sepals without fringe or glands.*

✓ 4. **quadrangulum** L. Stem 4-edged, somewhat winged, erect. L. ovate, with pellucid dots, and black glands on the margin. Sepals lanceolate, acuminate, quite entire. **p.** 7. *Moist.*

5. **maculatum** Crantz. Sepals ovato-lanceolate, denticulate, obtuse, mucronate, reflexed. Pan. ovate. Stem 4-edged, erect. L. elliptic-ovate, with a few pellucid dots. **p.** 7, 8. *Moist banks.*

✓ 6. **dubium** Leers. Stem obscurely and unequally 4-edged, erect. L. elliptic, obtuse, generally without pellucid dots, but with black dots on margin. Sepals elliptic, obtuse, often toothed at end. **p.** 7, 8. *Thickets, occ.*

✓ 7. **perforatum** L. Stem 2-edged, erect. Pan. fastigiate. L. elliptic-oblong, obtuse, with numerous pellucid dots. Sepals lanceolate, finely acute, twice as long as germen. **p.** 6–8. *Shade.*

8. **veronense** Schrank. Sepals lanceolate, somewhat acute, as long as ovary. Pan. ovate. Stem 2-edged, erect, branched. L. lineari-oblong, with numerous pellucid dots. **p.** 7, 8. *Open dry.* Istr. s. Tyr. Pays de Vaud. Doffk

✓ 9. **crispum** L. Stem erect, round, with numerous long, very spreading branches. L. lanceolate, undulato-sinuate at base, with pellucid dots. Sepals obtuse, denticulate, equalling germen. **p.** 7–9. *Dry fields.* s. It.

✓ 10. **humifusum** L. Stem round, or somewhat 2-edged below the L.; procumbent. L. oblong, with pellucid and black dots. Sepals unequal, 2 lanceolate, 3 oblong, obtuse, much exceeding germen, sometimes glandular. Stamens about 15. **p.** 7. *Gravel and sand.*

Corsicum

australe Ten. (has stem erect!
Poir. but seems to be this. sp.

✓ 11. **repens.** Stem terete, decumbent. Corymb few-flowered. Sepals ovato-lanceolate, acute, with black dots. L. ovato-linear, obtuse, approximate, hardly dotted. **p.** 5. *Dry.* Cannes. Mte. Circello.

ii. *Sepals fringed.*

a. *Glands nearly sessile.*

✓ 12. **linariifolium** Vahl. Sepals somewhat unequal, lanceolate, acute. Stems ascending, terete. L. linear, obtuse. Margin revolute. Stamens about 30. **p.** 6, 7. *Barren.* w. F. Jersey. s. w. Eng. *rare.*

✓ 13. **hirsutum** L. Sepals lanceolate. Glands on very short stalks. Stem herbaceous, terete, erect, hairy. L. oval, on short stalks, pellucido-punctate, *pubescent.* Pan. racemose. Pet. tipped with stalked glands. (Seeds velvety, KOCH,—papillose, LEIGHTON.) Styles diverging. **p.** 6, 7. *Woody hills.*

✓ 14. **montanum** L. Sepals lanceolate. Glands on very short stalks. Stem herbaceous, erect, round, smooth. L. sessile, ovato-oblong, obtuse, with pellucid dots, and black marginal dots. Pet. without dots or glands. Seeds finely dotted. **p.** 7. *Dry thickets, occ.*

✓ 15. **pulchrum** L. Sepals obtuse, broadly ovate, ciliate with sessile glands. Pet. fringed with glands. Fl. in lax, axillary and terminal panicles. L. amplexicaul, cordate, with pellucid dots. Margin somewhat revolute. Stem erect, terete. **p.** 7. *Dry woods and heaths.*

✓ 16. **nummularium** L. Sepals ovate, obtuse. Stems numerous, procumbent, terete. L. cordato-orbicular, on short stalks. **w.** 8. *Rocky hills.* Pyr. Dau.

17. **hyssopifolium** Vill. Sepals somewhat obtuse. Stem woody, round, ascending. L. oblongo-lanceolate, pellucido-punctate, opposite, and in axillary bundles. Styles 3 or 4. **w.** 7. *Mountains.* Dau. Prov.

✓ 18. **Coris** L. Sepals somewhat obtuse. Stem woody, ascending, round. L. in whorls! linear. Margin revolute. **w.** 6, 7. *Calc. mns.* Prov. Nice. Carrara.

b. *Glands on stalks longer than themselves, but not equalling width of Sepals.*

✓ 19. **ciliatum** Lam. Sepals somewhat acute. Stem herbaceous, somewhat 2-edged. L. on short stalks, somewhat cordate or ovato-oblong, obtuse, with pellucid dots, and black dots on the margin. Seeds with wavy stripes. **p.** 5. *Dry woods.* Naples.

20. **elegans.** Steph Sepals lanceolate. Stem 2-edged, nearly simple. L. cordato-lanceolate, quite entire. Disc pellucido-punctate. Margin with black dots. Seeds finely dotted. **s.** 6–8. *Calc. vineyards.* G. *rare.*

21. **perfoliatum.** Sepals lanceolate. Stem woody, terete, ascending. L. oblong, somewhat obtuse, pellucido-punctate; upper toothed. Seeds with wavy stripes. **w.** 5, 6. *Coasts.* Hyères. Civ. Vecchia. Abr. *Lower L. sometimes without dots.*

22. **Richeri.** Vill Sepals ovate, acute. Fringe of Bracts nearly as broad as membrane. Stem herbaceous, terete, simple, erect. L. quite sessile, ovate, with crowded black dots on margin, but no pellucid dots. Seeds with wavy stripes. Styles 3–5. **p.** 7, 8. *Calc. mns.* Jura. Alps. Apen. ✓

c. *Glands on stalks which are longer than breadth of Sepals.*

23. **barbatum.** Jacq Sepals ovate, acute. Stem erect. L. quite sessile, oblongo-lanceolate, with scattered black dots and pellucid dots. Margin somewhat revolute. Pet. minutely fringed. Seeds with wavy stripes. **p.** 6, 7. *Thickets.* Aus. Cal.

D. 3 *hypogynous Scales alternating with the sets of Stamens.*

24. **Elodes.** L Sepals smooth, with fringe of glandular hairs. Stem rooting at base. L. sessile, hirsute, subrotundo-ovate. Pan. lax, few-flowered. **p.** 7, 8. *Bogs. Not in Sw. or It.* ✓

25. **tomentosum.** L Sepals hairy all over, but without a distinct fringe. Stem round, creeping. L. ovate, with black dots on margin. Pan. lax. **p.** 6, 7. *Moist.* mdt. F. ✓

XIX. ACERINEÆ.

Calyx imbricate. Petals and Stamens inserted round an hypogynous disc. Germen double. Style 1. Fruit winged, separating into indehiscent 1–2-seeded nuts. *Trees, with opposite L.*

139. ACER. L

A. *Raceme somewhat cylindrical, compound at the base.*

1. **tataricum.** Rac. erect. Wings of Fr. parallel. L. cordate, subincise, unequally dentate. **s.T.** 5, 6. Austria. *Not in Koch.*

2. **Pseudoplatanus.** L Rac. pendulous. Wings of Fr. diverging. L. palmato-5-lobed. Lobes acuminate, unequally dentate. **l.T.** 5. *Woods.*

B. *Corymb broad and short, the separate Flower-stalks very long; lower branched.*

3. **campestre.** L Corymb erect. Wings of Fr. nearly in one line. L. palmato-5-lobed, repando-dentate. **s.T.** 5, 6. *Hedges and thickets.* ✓

4. **Lobelii.** Corymb erect. Wings of Fr. divaricate, almost horizontal. L. 7-nerved, 3- or 5-lobed. Lobes acuminato-cuspidate. Margin somewhat undulate, entire. **l.T.** 4. *Woods.* Mte. St. Angelo.

5. **platanoides.** L L. palmate, 7-nerved. Lobes 5, acuminate, inciso-dentate. Segments acuminate. Corymb erect. Wings of Fr. divaricate. **s.T.** 4. *Woody hills.* s. F. Sw. s. G. n. It.

6. **opulifolium.** Vill Corymb nearly sessile, nodding, bearing many capsules. Wings of Fr. diverging. L. 5-nerved, palmate, 3-lobed. Lobes obtuse, repando-dentate. **s.T.** 3, 4. *Woody hills.* Dau. Vall. It.

7. **obtusatum.** Wild Corymb pendulous, branched, many-flowered. Fr. and stalks hairy. Wings nearly parallel. L. palmate, 5–7-nerved, with 5 somewhat obtuse repando-dentate lobes, velvety beneath. **l.T.** 3. *Woods.* Nap. Albano. v of 6. g r g.

8. **Opulus.** Mil Fr.-stalks solitary, or in a sessile, few-flowered corymb. Wings of Fr. nearly parallel. L. palmate, 5-nerved, 3–5-lobed. The Lobes and their teeth obtuse. **s.T.** It. *Koch and Bert. unite this and the two preceding.* v.

9. **monspessulanum.** L Corymb few-flowered, erect. Wings of Fr. parallel, often overlapping. L. 3-lobed. Lobes equal, diverging, nearly entire. **s.T.** 4. *Stony hills.* s. F. n. It. ✓

β. *commutatum*, Ten. Corymbs pendulous. Cassano in Calabria.

In public walks we sometimes meet with the *Negundo*, differing from *Acer* in having no petals. The species is *fraxinifolium.* L. pinnate. Lts. 3–5, the odd one often 3-lobed. Also the *Æsculus*, L belonging to the *Hippocastaneæ*. The usual species is *Hippocastanum* L.

which has regularly 5 petals and 7 anthers; and a prickly capsule, including 2 or 3 polished chestnuts. The *Æsculus Pavia*, or *Pavia rubra*, with 4 petals and a smooth capsule, is also employed, but more rarely.

In this place we may also notice the *Melia* L *Azederach* L, which is a favourite ornamental tree in Italy. The calyx is small, quinquefid. Petals 5. Stamens 10, united into a tube, ending in 20 teeth. The fruit is a drupe or plum, containing a 5-celled and 5-furrowed nut. The L. are bipinnate. Lts. usually 5.

XX. AMPELIDEÆ [illegible]

Calyx entire, or with 5 small teeth. Petals 4 or 5, valvular, inserted, as well as Stamens, on a glandular disc. Germen with 4 Ovules, becoming a Berry. *Climbing shrubs.*

140. VITIS. L

✓ 1. **vinifera.** L L. lobed, sinuato-dentate. **S.** 5. *Moist.* s. Eur. *The naturalized plant is said to be diœcious.*

141. AMPELOPSIS. Michaux

1. **hederacea.** Mich L. ternate or quinate. Lts. stalked, acuminate, mucronato-serrate. **S.** 7, 8. *Bushy.* Naturalized in s. Tyr.

XXI. GERANIACEÆ.

Sepals 5, imbricate; in our species all similar. Petals 5. Stamens 5 or 10, monadelphous. Carpels 5, ultimately 1-seeded, each ending in a long beak, attached at the top to a prolonged axis, and, when the seeds are ripe, curling up with a spring.

142. ERODIUM. L'Heritier

A. *All L. pinnate. Lower Lts. not opposite, and not larger than the others.*

1. **staphylinum.** Hairy and glandular. Lts. bipinnatifid; the segments obtuse. Pet. about as long as long as calyx. Cotyledons pinnatifid. **a.** 4–6. *Fields and sea-shore.*—Bert.

2. **cicutarium.** L'Herit Stem branched, diffuse. Lts. pinnatifid, incise. Base of Filaments ✓ expanded, without hairs or teeth. Beak of Fr. hairy. (Cotyledons 3-lobed, Bert.) **a.** 5–9. *Cult.*

tenuisectum

3. **romanum.** Wild Stem 0! Lts. ovate or ovato-oblong, pinnatifid. Rachis without teeth. Stalks ✓ many-flowered. Bracts numerous, membranous, jagged, often united at base. Filaments lanceolate, without hairs or teeth. **a.** 3–6. *Coasts.* Mdt.

4. **Manescavi.** Boubani "Stem 0. Lts. oblong or ovato-oblong, pinnatifid. Rachis without teeth. ✓ Stip. linear large! Gr. & G. Stalks many-flowered. Bracts few, broad, herbaceous, united. Filaments without teeth. **a.** ? Val d'Ossai and Val d'Aspi in Pyr."—Cosson, *who relies, moreover, on à ~~long~~ mucro to the sepals; but this exists also in* E. romanum.

✓ 5. **moschatum.** L'Herit Stem branched, procumbent. Lts. oblongo-ovate, incise. Filaments of perfect Stamens smooth, expanded at base, toothed. *Musky.* **a.** 6, 7. *Waste.*

B. *L. pinnato-ternate; the lower pair being opposite, somewhat larger, and quite separate; each succeeding pair rising from the preceding on a wedge-shaped base; all much divided.*

6. **petræum.** Wild No stem. Rhizoma woody. Rachis of L. dentate. Pet. retuse. **p.** e. Pyr. ✓ Languedoc.

7. **glandulosum.** Wild No stem. Rhizoma woody. L. with glandular hairs. Rachis toothed. Pet. acute. **p.** *High rocks.* Pyr. *Var. of* petræum? Wild

E. asplenioides is said to have been found at Port Juvenal, but I apprehend has not been naturalized.

8. **alpinum.** Perennial, with an umbelled scape or branched stem. L. bipinnatifid. Segments and rachis sharply laciniate. Sepals narrow, oblong, mucronate. Pet. broadly ovate, two or three times as long as calyx. **p.** *High.* Abruzzi. Umbria.

9. **ciconium.** Wild Annual, somewhat villous. Stems ascending. Lts. sessile. Segments incise, acute. ✓ Rachis toothed. Two of the Pet.

somewhat emarginate, not longer than calyx. (Base of Filaments lanceolate, ciliate, Koch.) **a.** 3, 4. *Sandy.* it. Sw. It. Sic.

10. **gruinum.** L. Erect. Root L. cordate, undivided. Stem L. opposite, acuminate, ternate, inciso-dentate; the middle divisions lengthened. Divisions of upper L. pinnatifid. Stalks 1–3-flowered. Sepals 3-nerved. **a.** 5. *Open, grassy.* Sic.

11. **Botrys.** Bertol Strigoso-hispid. Lower L. oblong, lobed, or pinnatifid, somewhat cordate at base; upper pinnatipartite, laciniate, with acute segments. Stalks 2–3-flowered. Cal. downy, with a short point. **a.** 6. *Sandy.* Albano. Nap. Sic.

12. **laciniatum.** Cav. Root L. cordato-ovate, 3-lobed, toothed. Stem L. palmate; divisions deeply laciniato-pinnatifid. Segments linear, acute. Stip. broadly ovate, obtuse. Umbels on long stalks, 4–10-flowered. **a.** 4, 5. *Shores.* It.

C. *L. lobed, or entire, not laciniately divided.*

13. **chium.** Wild Stems diffuse. L. cordate; lower with broad overlapping lobes; upper tripartite, inciso-dentate; the middle segment generally trifid. Stip. acute. Stalks many-flowered. Hairs of Cal. incurved, not glandular. **a.** 4. *Sandy coasts.* Lecce. Reggio. Sic.

14. **malacoides.** Wild Glanduloso-pubescent. Stem erect. L. cordate, undivided, or somewhat 3-lobed. Lobes not overlapping. Stip. acute. Stalks many-flowered. Pet. equalling calyx. (All Stamens lanceolate, hairless, Koch.) *Awns of Sepals very short.* **a.** 2–4. *Grassy borders.* s. Eur.

15. **alnifolium.** "Stems diffuse. Hairs spreading. L. cordato-subrotund, undivided, or obscurely 3-lobed, nearly smooth, dentato-crenate; uppermost oblong, acutely serrate. Stalks many-flowered. (All, except the uppermost, conspicuously shorter than L. Hairs of Sepals incurved, mostly without glands. Stip. acute, Bert.) **a.** 4, 5. *Grassy hills.* Sic. *Differs from* malacoides *in habit and colour.*"—Guss.

16. **Gussonii.** Densely villous. L. cordate, obtuse, undivided or lobed, bluntly dentate. Stip. and Bract ovate, scariose, obtuse. Stalks long, many-flowered. Pet. obovate, twice as long as awned sepals. **p.** *Low hills.* K. Nap. *rare.*

17. **nervulosum.** "Stem short, diffuse. Hairs bent down. L. cordate, incise, dentate, somewhat hoary. Stip. and Bracts ovate, scariose. Stalks many-flowered. Pet. as long as calyx. **a.** 4. *Open hills.* Taormina. *rare.*" —Guss. *from* Presl.

18. **littoreum.** Lemen Stems prostrate, nearly hairless. L. cordato-orbicular, 3-lobed, unequally crenate. Stalks long, many-flowered. Awns bearded. **p.** *Sandy shores.* Narbonne. Cors. *Not noticed by Bert. Seems hardly to differ from* E. maritimum, *except in number of flowers.*

19. **albiflorum.** Decumbent. Hairs spreading; the upper bearing glands. L. ovato-oblong, with coarse, acute, unequal serratures. Fl.-stalks about as long as L. **a.** 6. *Pastures.* Sard.

corsicum Lemen
Lois not L

20. **malopoides.** Downy. Stem erect, or nearly wanting. Lower L. cordate or cordato-oblong, somewhat lobed; upper crenate, undivided. Stalks 2–4-flowered. Pet. two or three times as long as calyx. Awns bearded. **p.** 5. *Rocky shores.* Sard. Cors.

21. **maritimum.** Sm Stems prostrate, diffuse. L. cordate, inciso-crenate, hispid. Stalks 1–3-flowered. Pet. shorter than calyx. Awns not bearded. **p.** 5–9. *Shores.* Fr. Eng.

143. GERANIUM.

A. Perennial.
  i. Capsule wrinkled. Sp. 1–4.
  ii. Capsule not wrinkled.
    a. Stalks 1-flowered. Sp. 5, 6.
    b. Stalks 2-flowered.
      * Root with globose tubers. Sp. 7.
      ** Rhizoma præmorse. Sp. 8–13.
      *** Root descending. Sp. 14–16.
B. Annual. Stalks 2-flowered.
  i. Capsule not wrinkled. Sp. 17–21.
  ii. Capsule wrinkled. Sp. 22–26.

A. *Perennial.*

i. *Capsule wrinkled.*

1. **macrorhizum.** L. Rhizoma præmorse. Stems erect, dichotomous. L. palmate, 7-fid, inciso-dentate. Fr.-stalks erect. Pet. spatulate. Claw as long as calyx. Caps. hairless. **p.** 4–6. *Stony mns.* Idria, Plekner Alps in Carinthia. italian Alps. s. Tyr. Abruzzi.

2. **reflexum.** Lois Rhizoma præmorse. Stems erect, terete. L. palmate, 5–7-lobed, inciso-dentate. Pet. reflexed, dentato-lacerate at top.

Stamens hairless? Caps. hairy? **p.** 6. *Grass.* Rome. Apen. Abruzzi.

✓ 3. **phæum.** ♃ Rhizoma præmorse. Stems erect, terete. L. palmato-7-lobed, inciso-dentate. Pet. subrotund, spreading, flat. Claw short, bearded at base. Stamens hispido-ciliate. Caps. hairy. **p.** 5, 6. *Woods and mountain meadows. occ.*

4. **asphodeloides.** Root fusiform. Stems diffuse, retrorso-hispid. L. 5-lobed, trifid, somewhat incise. Pet. emarginate. Filaments subulate, hairless. Caps. somewhat wrinkled, downy. **p.** 5. *Grassy woods.* Sic.

ii. *Capsule even.*

a. *Stalks 1-flowered.*

✓ 5. **sibiricum.** ♃ Root fusiform. Stems diffuse. L. palmato-5-partite. Segments rhomboeo-oblong, inciso-serrate. Pet. slightly emarginate, equalling awned calyx. Caps. downy. Seeds somewhat dotted. **p.** 7, 8. *Stony.* Bruchsal in Baden.

✓ 6. **sanguineum.** ♃ Rhizoma præmorse. Outline of L. reniform, 7-partite. Segments divided. Pet. emarginate, twice as long as awned sepals. Caps. with a few bristles at top. Seeds finely dotted. **p.** 6–9. *Dry.*

β. Stalks 2-flowered. Sw. Albalonga.

b. *Stalks 2-flowered.*

* *Root descending with globular tubers.*

✓ 7. **tuberosum.** ♃ L. palmato-5-partite. Segments linear, pinnately inciso-serrate. Caps. hirsute. **p.** 2, 3. *Cult.* Mars. Agde. Rome. Abruzzi. Sic.

** *Rhizoma præmorse.*

✓ 8. **nodosum.** ♃ Stems 4-edged. Root L. 5-lobed; upper 3-lobed. Segments ovate, acuminate, serrate. Fr.-stalks erect. Sepals with long awns, half as long as obcordate petals. Beak downy. **p.** 6, 7. *Rough woods and thickets.* Fr. Aus. Carinthia. Carn. fl lilac veined

9. **striatum.** ♃ Lower L. 5-, upper 3-lobed. Segments ovate, acute, inciso-dentate. Stip. free. Sepals 3-nerved, with a short awn. Pet. somewhat 2-lobed. Beak downy. **p.** 5, 6. *Shade.* K. Nap. Sic.

✓ 10. **palustre.** ♃ Stem diffuse. L. palmato-5-7-lobed, inciso-dentate. Common Fl.-stalk very long, hairy; partial bent down after flowering. Pet. entire, twice as long as awned sepals. Filaments subulate, hairless. Beak of Caps. with short spreading hairs not glandular. **p.** 5–8. *Moist meadows.* Dau. G. Fr.

β Endressi

✓ 11. **aconitifolium.** L'Herit. Stem ascending. L. palmato-7-partite, laciniate. Cal. and stalks villous. Pet. entire. Filaments subulate, nearly hairless. Caps. with adpressed hairs not glandular. Seeds finely dotted. **p.** 6–8. *Sides of mountain streams.* Dau. Alps of Vallais. *rare.*

✓ 12. **sylvaticum.** ♃ Stem terete, erect. L. palmato-7-lobed, inciso-serrate. Fl. somewhat corymbose, erect after flowering. Pet. obovate, twice as long as awned sepals. Filaments subulate, ciliate in the middle. Caps. and Beak covered with spreading glandular hairs. Seeds finely dotted. **p.** 6, 7. *Mountain woods.*

✓ 13. **pratense.** ♃ Stem terete, erect. L. palmato-7-lobed, inciso-serrate. Fl. somewhat corymbose. Pet. entire, twice as long as awned sepals. Filaments with ovato-triangular base. Caps. and Beak covered with spreading glandular hairs. Seeds finely dotted. **p.** 7, 8. *Moist meadows.*

*** *Root descending, without tubers.*

✓ 14. **argenteum.** ♃ Root thick, woody, fusiform. Stem very short. L. silky, 5–7-partite. Divisions tripartite. Segments linear. Pet. somewhat emarginate, exceeding mucronate sepals. Caps. silky. **p.** 7, 8. *High.* Alps. *rare.*

cinereum Cav. L'Heril

✓ 15. **varium.** ♃ Root thick, somewhat woody. Stem hardly any. L. cano-pubescent, 5-partite. Segments cuneiform, trifid. Pet. emarginate. **p.** 6, 7. *High.* Pyr. Abr.

✓ 16. **pyrenaicum.** ♃ Root fusiform. Stem diffuse, prolonged. L. reniform, 7-lobed. Lobes of lower L. incise in front, obtusely crenate. Floral L. tripartite. Pet. cloven, twice as long as mucronate sepals. Caps. keeled, adpressedly pubescent. Seeds even. **p.** 6, 7. *Hill pastures.*

B. *Annual. Stalks 2-flowered.*

i. *Capsule not wrinkled.*

✓ 17. **pusillum.** ♃ Stems diffuse. L. suborbicular, many-lobed, trifid. Sepals with short awn. Pet. *blue*; only 5 perfect anthers. Caps. keeled. Hairs adpressed. Seeds without dots. **a.** 6–9. *Uncult. Very much resembles* G. molle.

18. **bohemicum.** ♃ L. palmate, 5-fid. Segments acute, inciso-dentate. Stem with spreading hairs. Stalks erect after flowering. Pet. emarginate. Cal. with a long awn. Hairs of Caps. spreading. Seeds even. **a.** 6–8. *Mn. fir-woods.* Boh. Bav. Vallais. *Very rare.*

✓ 19. **rotundifolium.** ♃ Root L. reniform, 7-lobed. Stem L. subrotund, truncate at base, 5-lobed. Lobes trifid. Pet. entire, somewhat exceeding mucronate sepals. Caps. hirsute. Seeds reticulate. **a.** 6, 7. *Uncult.*

✓ 20. **dissectum.** L L. 5-partite. Divisions trifid, linear. Pet. obcordate, as long as awned sepals. Caps. hairy. Seeds reticulate. **a.** 5, 6. *Uncult.*

21. **columbinum.** L L. 5-partite. Divisions of lower multifid; of upper trifid. Segments linear. Pet. obcordate, equalling long, awned sepals. Stalks much exceeding L. Caps. quite smooth. Seeds reticulate. **a.** 6, 7. *Fields and banks.*

ii. *Capsule wrinkled.*

22. **villosum.** Ten "L. cordato-orbicular, 5–7-lobed. Lobes trifid, obtuse. Stem erect, softly villous. Pet. emarginate, twice as long as sepals. Caps. hairless, their awns covered with simple hairs. Seeds reticulate. **p.** *Grassy.* Cal."—Ten. v of 23. Grrg.

23. **molle.** L L. reniform, 7–9-lobed, incise; upper orbicular. Carpels without hairs. Seeds without dots. **a.** 4–8. *Uncult.* ✓

24. **lucidum.** L Quite smooth. L. orbicular, 5-lobed. Cal. pyramidal, transversely rugose. Caps. rugose, triply keeled, downy at top. Seeds even. **a.** 5–8. *Shady rocks and walls.* ✓

25. **divaricatum.** Ehrh L. palmato-5-fid; upper L. trifid. Segments rhomboid, inciso-dentate; *one lateral lobe usually very large.* Pet. emarginate. Sepals with a short awn. Caps. hairy. Seeds quite smooth. **a.** 6–8. *Vineyards, &c.* V. of St. Nicholas. Mte. Baldo. Sil. *very rare.*

26. **robertianum.** L L. 3–5-nate. Lts. stalked, trifid, incise. Cal. with 10 angles. Caps. hairless, wrinkled. **a.** 5–10. *Rocks, sand, uncult.* ✓

β. purpureum. Flowers small, like those of Sp. 24.

XXII. BALSAMINEÆ.

Sepals 3 or 5; one of them spurred. Petals 5; the lateral united in pairs. Stamens 5. Capsule of 5 valves and 5 cells. Valves springing on the touch.

144. IMPATIENS. L

1. **fulva.** ~~L~~ Nutt Stalks 2–4-flowered. L. rhomboideo-ovate, obtuse, with coarse glandular serratures. Spur reflexed, emarginate, its Pet. exceeding others. **a.** 7, 8. Guildford.

2. **Noli me tangere.** L Stalks 3–6-flowered. Fl. pendulous. Spur loosely recurved. L. ovate. Serratures not glandular. Joinings of Stem tumid. **a.** 7, 8. *Moist woods. Not in Sic.* ✓

XXIII. OXALIDEÆ.

Sepals 5, equal, permanent, imbricate. Petals 5, convolute, sometimes united at base. Stamens 10, monadelphous; the inner longest. Styles 5. Capsule of 5 or 10 valves.

145. OXALIS. L

1. **stricta.** L Stem erect, leafy. Umbel stalked, 2–6-flowered, about as long as L. Pet. entire. Lts. obcordate. Stip. none. **a.** *Uncult.* m. and s. Eur.

2. **corniculata.** L Stem creeping. Stalks about 2-flowered, shorter than L. Pet. emarginate. Stip. united to base of L.-stalk. **a.** (**p.** DC.) 5–10. *Uncult.* m. and s. Eur.

3. **Acetosella.** L Stemless. Rhizoma creeping, toothed. L. obcordate, hairy. Scape 1-flowered, exceeding L., with two Bracts above the middle. **p.** 4, 5. *Moist shade.* ✓

Rylic a

XXIV. ZYGOPHYLLEÆ.

Sepals 5, imbricate. Petals 5, regular. Stamens 10, separate. Ovary of 5 cells, splitting in the fruit into as many carpels. Styles united. Ovulum horizontal or pendulous.

146. TRIBULUS. L

✓ 1. **terrestris.** L Caps. 4-horned. Lts. 6 pair, nearly equal. Stalk exceeding flower-stalk. **a.** 7–10. *Way sides.* s. Eur. Bordeaux.

147. FAGONIA.

✓ 1. **cretica.** Lts. 3, lanceolate. Stip. spinescent. Angles and stalks of Fr. villous. **a.** 4, 5. *Wood* of Cappideri in Sic.

148. ZYGOPHYLLUM.

1. **Fabago.** Lts. 2, obliquely ovate. Flowering-stalks erect. Pet. entire. **p.** 5, 6. ✓ *Fields.* Calarita in Sard.? *Not native?*

XXV. RUTACEÆ.

Calyx imbricate. Corolla regular or nearly so, of 3–5 petals. Ovary with as many lobes and cells as there are divisions in the calyx. Stamens twice as many as petals. Style 1. L. with pellucid dots.

149. RUTA. L

A. *Lobes of Capsule obtuse.*

✓ 1. **montana.** Clus L. supradecompound. Outline oblongo-obovate. Divisions all linear. Pet. entire, gradually attenuate. **w.** 6. *Dry calc. hills.* s. Fr. (Cusano Provinciæ Dertonensis, Bert.)

✓ 2. **graveolens.** L L. supradecompound. Outline somewhat triangular. Lts. ovali-oblong, the terminal obovate. Pet. entire or denticulate, abruptly contracted into a claw. **p.** 6, 7. *Barren.* s. Eur.

3. **divaricata.** Ten L. supradecompound. Outline somewhat triangular. Lts. oblongo-linear, terminal. Lts. of lower L. elongato-obovate. Pet. entire or denticulate, abruptly contracted into a claw. **w.** 6, 7. *Clefts of calcareous rocks.* K. Nap. Trieste.

4. **corsica.** DC L. decompound. Divisions of L. ovate, somewhat crenate. Pan. dichotomous. Stalks long, 1-flowered, spinescent! Stem much branched. Pet. nearly entire, contracted into a claw. **p.** *Mountains.* Cors.

✓ 5. **Patavina.** L Middle L. sessile, ternate. Lts. linear or lanceolate; the lower L. quite simple. Cal. and Stalk villous. **w.** 6. At Arqua in the Euganean hills. between Pavenzo and Fontane, Istr.

B. *Lobes of Capsule acuminate.*

6. **bracteosa.** DC L. supradecompound. Length hardly three times the width. Lts. oblong, attenuate. Bracts cordate, acuminate. Pet. fringed. **h.** 6, 7. *Dry rocky.* s. Fr. Istr. It. ✓

7. **angustifolia.** Pers L. supradecompound. Length full four times the width. Lts. lineari-oblong. Bracts linear, auricled, very small. Pet. fringed. **h.** 5, 6. *Dry rocky.* Dax. Nice. ✓

150. PEGANUM.

1. **Harmala.** L. sessile, multifid. Divisions linear. Fl. stalked, solitary, opposite L. **w.** 6. At Tavoliere in Apulia. *abundant.* ✓

151. DICTAMNUS. L

1. **albus.** L Stem simple. L. pinnate, with terminal Lt. Serratures spreading. **p.** 5, 6. *Woody hills.* Narbonne. s. Alps. Abr. Sic.? Rh. ✓

β. *obtusiflorus.* Koch L. with rounded crenatures. Fiume. s. Tyr.

XXVI. CORIARIÆ.

Calyx campanulate, 10-cleft; the outer Segments larger, the inner callous. Petals 0. Stamens 10. Ovary of 5 angles and 5 cells. Carpels 5, not opening, 1-seeded. *Shrubs with opposite branches.*

152. CORIARIA. Niss

✓ 1. **myrtifolia.** L L. ovato-lanceolate, acute, 3-nerved, somewhat stalked, smooth. Rac. nearly erect. **S.** *Dry hills.* mdt. Fr. Nice.

CALYCIFLORÆ.

This Class includes not only those plants where the Stamens grow from an herbaceous ring, which might be considered as belonging to the Calyx—the *Perigyna* of Jussieu,—but also most of the *Epigyna* of that author; the theory supposing that a Calyx exists, but attached to the Germen. In the first 24 orders here admitted (with the exception of the *Cucurbitaceæ*) the Petals are separate; the last 11 are monopetalous. The *Loranthaceæ* are uncertain. Various alterations and, perhaps, some improvements, have been made by late writers in the limits and distribution of this Class, but I have thought better to adhere to an arrangement which has been applied to a general work on Botany, than to choose whose I would follow among the authors of limited Floras.

XXVII. CELASTRINEÆ.

Sepals 4–5, imbricate. Disc fleshy and more or less connected with the Germen. Petals 4–5, alike. Capsule 2–4-celled. Placenta central.

153. STAPHYLEA. L

1. **pinnata.** L L. pinnate, the stalk without glands. Lts. 5–7, oblongo-lanceolate, serrate. Fl. in racemes. Fr. inflated. **l.S.** 4, 5. *Moist woods.* s. Eur. Alsace.

154. EVONYMUS. Tourn

1. **europæus.** L Caps. usually 4-lobed. Angles obtuse. Aril covering the whole seed. Pet. oblong. Branches smooth, 4-edged. L. ovato-lanceolate, finely serrate. **S.** 5. *Hedges and thickets.*

2. **verrucosus.** Scop Caps. usually 4-lobed. Angles obtuse. Aril covering half the seed. Pet. subrotund, purplish, usually 4. Branches terete, verrucose. L. elliptic, serrulate. **S.** 5, 6. *Woody mountains.* Austria. Carniola. Sty. Sil.

3. **latifolius.** Scop Caps. usually 5-lobed. Angles somewhat winged. Pet. subrotund, usually 5. Branches somewhat compressed, smooth. L. elliptic, serrulate. **S.** 5, 6. *Mountain thickets.* Dau. G. n. It. Abruzzi. n. Alps. ✓

155. ILEX. L

1. **Aquifolium.** L L. ovate, acute, shining, undulate. Teeth spinous. Stalks short, axillary, many-flowered. **s.T.** 5. *Shade.* ✓

XXVIII. RHAMNEÆ.

Calyx 4–5-cleft. Divisions valvate, deciduous. Tube persistent and more or less adhering to the Germen. Petals often scale-like. Stamens 4–5, opposite petals. Seeds solitary, erect.

156. ZIZYPHUS. Tourn

1. **vulgaris.** Lam L. ovato-oblong, retuse, denticulate, hairless. Prickles 0, or in pairs, one straight, the other recurved. Drupe ovato-oblong. **S.** 5. Nat. on coasts of Mdt.

2. **Lotus.** L. broadly oval, obscurely crenate, hairless. Prickles in pairs, straight and recurved. Drupe subrotundo-ovate. **S.** 6, 7. *Nat. near* Palermo.

157. PALIURUS. Tourn

1. **aculeatus.** Lam Branches downy. Prickles in pairs, straight and recurved. L. ovate, acute, 3-nerved. Wing of Fr. striate, crenulate. **S.** 5, 6. s. Eur. *Much used in hedges.*

158. RHAMNUS. L

A. *Branches spinescent. Stamens* 4. *Flowers* 4-*cleft. Style* 2–3-*cleft.*

1. **cathartica** L Erect. Branches opposite. L. broad ovate, acuminate, serrate, deciduous. Stalks two or three times as long as stipules. Fr. 4-seeded. Furrow of Seeds closed. **l.S.** 5. *Hedges and thickets.* ✓

β. *hydriensis.* Larger L. attenuate at base. At Idria.

✓ 2. **infectoria.** L. Diffuse. Branches opposite. L. elliptic, crenate, deciduous. Stalks about equalling stipules. All the Fl. with petals. Furrow of Seeds closed. **S.** 6, 7. *Stony.* s. Fr. Austr. Siles. Salzb. K. Nap.

✓ 3. **tinctoria.** Waldst. Much branched. Branches divaricate. L. elliptic, serrulate, deciduous. Stalks about equalling stipules. Drupe mucronate, placed on the hemispherical base of calyx. Suture of Seeds gaping. **S.** 5. lower Austria on the borders of Hungary.

✓ 4. **saxatilis.** L. Decumbent. Branches opposite. L. obovato-lanceolate, serrate, deciduous. Stalks about equalling stipules. Fertile Fl. without petals. Drupe on the nearly flat base of calyx. Suture of Seeds gaping. **S.** 5, 6. *Stony.* Dau. e. Alps. Monte Gargano.

5. **oleoides.** L. Erect, much branched. L. evergreen, oblongo-obovate, quite entire. **s.S.** 4, 5. *Calc. hills.* Coast of Sic. between Trapani and Alicata. Sard.

6. **pubescens.** Pourr "Diffuse. L. ovate, quite entire, downy. **s.S.** Between Cannes and Carcassonne. *Perhaps a variety of Sp.* 5."—Duby.

7. **persicifolia.** "A tree. L. lanceolate, on long stalks, minutely crenate, downy beneath. Cal. entirely free; divisions 4, lanceolate, acuminate, at last reflexed. Berry pulpy, with 4 furrows. **s.T.** 3, 4. *Wood* delle Barbagie, Sard."—Bert.

B. *Deciduous shrubs. Branches not thorny, alternate. Divisions of Flower* 4. *Stigma trifid.*

8. **pumila.** L. Much branched, decumbent. L. elliptic or subrotund, crenate, with about 6 arched nerves on each side, serrate. Fl. all perfect? **s.S.** 6, 7. *Calc. mountains.* Pyr. Alps. ✓

β. *rupestris,* DC. L. quite entire.

γ. *pusillus,* Ten. L. obovate, mucronate. K. Nap.

9. **alpina.** L. Suberect, tortuose. L. ovato-elliptic, acuminate, serrulate, with about 12 straight nerves on each side. Fl. diœcious. **s.S.** 5, 6. *Mountains.* Alps. Pyr. Jura. Abr. ✓

C. *Evergreen. Branches not thorny, alternate. Divisions of Flower* 4 *or* 5. *Style bi- trifid.*

10. **Alaternus.** Scop L. serrate, quite smooth. Fl. diœcious, in short racemes. **S.** 2, 3. *Walls and dry woods.* s. Eur. ✓

D. *Deciduous shrubs. Branches alternate, not thorny. Divisions of Flower* 5. *Style undivided. Stigma capitate. Flowers perfect.*

11. **rupestris.** Scop L. ovato-subrotund, with cartilaginous serratures inside of calyx. Pet. and Stamens white. **S.** 6, 7. *Stony rough coasts.* Carniola.

12. **Frangula.** L. L. elliptic, acuminate, quite entire. **S.** 5, 6. *Woods and thickets.* ✓

XXIX. TEREBINTHACEÆ.

Calyx small, persistent. Petals inserted on calyx. Æstivation valvular. Fruit not opening. Seed 1. L. alternate, without stipules.

159. PISTACIA. L

A. *L. with an odd Lt.; deciduous.*

1. **vera.** L Lts. 1–5, ovate, slightly attenu- fr. large ate at base, somewhat mucronate. **S.** *Said by DC. to be naturalized on coasts of Mdt.*

β. *trifolia,* Linn. Lts. 1–3. Sic.

✓ 2. **Terebinthus.** L Lts. about 7, ovato-lanceolate, mucronate. **S.** 5. *Rocks and walls.* s. Eur.

B. *L. abruptly pinnate, evergreen.*

✓ 3. **Lentiscus.** L Lts. 8, lanceolate. Stalk winged. **s.S.** 5. *Rocks and walls.* s. Eur.

160. RHUS. L

✓ 1. **Cotinus.** L L. simple, obovate. Fl. in a diffuse panicle, perfect and abortive. Barren Fl.-stalks hairy. Drupe semi-cordate, veiny, hairless. **S.** 6. *Dry hills.* s. e. Fr. Austr. n. It.

2. **Coriaria.** L L. pinnate. Lts. 5–7-paired, elliptic, coarsely dentate, villous beneath. Stalk naked, with a slight border towards the top. **S.** 6–8. *Dry hills.* s. Eur. *rare.* ✓

3. **Thezera.** L. digitate. Lts. 3–5, lineari-cuneiform, some of them divided or toothed. Stalks somewhat winged. Pan. axillary, diœcious. Branches thorny. Fr. globose, with 3 tubercles at top. **S.** 3, 4. *Dry calc. hills.* s. Sic.

4. **dioica.** L. ternate. Lts. cuneiform,

dentate above middle. Rac. terminal, diœcious. Branches thorny, divaricate. **S.** 3, 4. *Dry calc. hills.* San Vito, Santa Croce, Sciacca and Scicli in Sic.

5. **radicans.** L. ternate, smooth. Lts. entire. Fl. in panicles. Drupe roundish, ovate. **s.S.** *Boggy woods* by Montaure near Louviers.—Duby. *An escape?*

161. CNEORUM. L.

1. **tricoccum.** L. Smooth. Fl. axillary. Stalks free. **s.S.** *Rocky.* s. Fr. Nice. ✓

XXX. LEGUMINOSÆ.

Stamens 10, united at the base, or nine of them united and one separate. Flowers papilionaceous. This character applies to all the plants of this work, except to *Anagyris* and *Cercis*, in which the Stamens are all separate; and to *Ceratonia*, which has five separate Stamens and no Corolla. An *Acacia* is also sometimes planted in the public walks in Italy. *Gleditschia Triacanthos,* and perhaps *macracantha,* likewise occur in such situations. None of these are papilionaceous.

The Tribes of this order are:—

1. ANOMALÆ.—In which I have put together the three genera above mentioned . . . . Gen. 162–164.
2. LOTEÆ.—Legume continuous. Seeds not imbedded. Cotyledons rising above ground as leaves. L. simple, ternate, or pinnate, with a terminal Lt.
   - Subtribe 1. Genisteæ.—Stamens all united! . . . . Gen. 165–171.
   - 2. Trifolieæ.—L. ternate . . . . Gen. 172–179.
   - 3. Astragaleæ.—L. pinnate, with an odd Lt. . . . . . Gen. 180–187.
3. HEDYSAREÆ.—Legume divided transversely into 1-seeded joints. L. pinnate, with a terminal Lt. . . . . Gen. 188–195.
4. VICIEÆ.—Legume continuous. Seeds not imbedded. Cotyledons remaining underground. L. (*except in* Cicer) abruptly pinnate . . . . Gen. 196–201.
5. PHASEOLEÆ.—Seeds imbedded in a cellular mass. Legume torulose, but not truly jointed . . . . Gen. 202.

Tribe I. *ANOMALÆ.*

162. ANAGYRIS. Tourn

1. **fœtida.** L. Lts. 3, entire, lanceolate, acute. Leg. acuminate. **S.** 2. *Calc. stony.* mdt. Fr. It.

163. CERCIS. L.

[illegible]

1. **Siliquastrum.** L. L. roundish, heart-shaped, very obtuse, smooth. **s.T.** 4, 5. s. Tyr.

164. CERATONIA. L.

1. **Siliqua.** L. Unarmed. L. pinnate. Lts. oval, obtuse. **l.T.** 9, 10. *Rocky coasts.* Mdt.

Tribe II. *LOTEÆ.*

Sub-tribe 1. Genisteæ.

165. ULEX. L.

1. **europæus.** L. Sm Cal. downy. Teeth minute, connivent. Bracts or secondary Spines extending for half the length of the primary; Fl. on both. **S.** 11–6. w. Eur. ✓

2. **strictus.** Mack Primary Spines small, slender, tetragonal. Fl. from the summit of the stem *and not from the spines.*—Bab. **S.** 4. Lord Londonderry's park, Down, Ireland.

3. **provincialis.** Lois Cal. somewhat downy. Teeth spreading. Fl. chiefly on the secondary spines, which are distantly placed along the primary. **s.S.** *Barren.* Prov. Lang. ✓

4. **nanus.** Forst. Sm Cal. nearly smooth. Teeth somewhat spreading. Bracts and secondary Spines crowded at the base of the primary. Fl. only on the primary spines. **s.S.** *Dry heaths.* w. Eur. ✓

166. GENISTA. L.

A. L. mostly ternate. Upper Lip of Cal. bipartite.

i. Plant not thorny. Sp. 1–5.

ii. Plant thorny.

- **a.** Upper L. simple. Sp. 6–9.
- **b.** All L. ternate. Sp. 10, 11.

B. All L. simple. Upper Lip of Cal. bipartite.
- **i.** Plant thorny. Sp. 12–20.
- **ii.** Plant unarmed.
  - **a.** Fl. in lateral racemes. Sp. 21, 22.
  - **b.** Fl. in terminal racemes. Sp. 23–31.
  - **c.** Fl. solitary, axillary, nearly sessile. Sp. 32–36.

C. L. simple. Upper Lip of Cal. merely bidentate. Sp. 37–40.

A. *L. mostly ternate. Upper Lip of Calyx bipartite.*

i. *No thorns.*

✓ 1. **candicans.** L L. stalked, all ternate. Lts. obovate. Hairs adpressed. Branches angular. Heads terminal, few-flowered. Leg. hirsute. **S.** 5. *Dry thickets.* Montp. Prov. Rome. Sic.

✓ 2. **linifolia.** L L. sessile or nearly so, crowded, almost all ternate. Lts. linear, silky beneath. Margin at last revolute. Branches sulcate. Rac. terminal, crowded. Leg. hirsute. **S.** 4. Isl. of Hyères.

✓ 3. **radiata.** Scop L. nearly sessile, opposite, scattered, almost all ternate. Lts. linear, somewhat silky. Branches angular, crowded. Heads 2–4-flowered. Bracteoles ovate. Standard deeply emarginate, somewhat hairy. Keel densely silky, exceeding wings. **S.** 6, 7. lower Alps of Prov.

4. **holopetala.** Reich L. nearly sessile, opposite, almost all ternate. Lts. linear. Heads about 4-flowered, stalked. Bracteoles lineari-subulate. Standard rounded, obtuse, entire, densely silky, as well as Keel. **S.** 5, 6. *Mountains.* Zhaun in Carniola. *Cytisus?*

5. **triquetra.** Ait Uppermost L. simple. Lts. ovato-lanceolate, villous. Branches decumbent, 3-edged. Rac. terminal, short. **S.** Cors. v of 31 K.

ii. *Thorny. Some L. ternate.*

a. *Upper L. simple.*

6. **ephedrioides.** D.C L. few, sessile. Lts. linear. Bracts at last striate. Fl. alternate, nearly sessile, solitary. **S.** Cors. Sard.

✓ 7. **Lobelii.** DC L. few; the lowest sessile, ternate; the rest mostly simple, lineari-oblong, silky. Branches crowded, striate. Fl. few, solitary, stalked, in a sort of raceme. Cal. downy. **s.S.** 5, 6. Sainte Baume near Toulon. v of 9. Gr. G

Morisii

8. **Saltzmanni.** D.C L. sessile. Lts. oblong, obtuse. Branches at last striate, lax. Fl. in pairs in a sort of raceme, silky. Three lower teeth of Cal. narrower, but nearly as long as upper. **S.** *Stony.* Near Corte, Cors. v of 9. Gr.

9. **aspalathoides.** Lam L. few; lowest sessile, ternate, the rest lineari-oblong. Branches at last striate, lax, somewhat recurved. Fl. in pairs, in a sort of raceme, silky. Three lower teeth of Cal. very minute. **s.S.** 2, 3. *Dry calc.* w. Sic.

b. *All L. ternate and sessile.*

10. **Cupani.** L. hirsute, nearly all ternate. Lts. lineari-lanceolate. Rac. terminal. Cal. somewhat hirsute. Cor. smooth. Seed 1. **s.S.** *Dry calc.* Madonie.

11. **horrida.** DC L. stalked, opposite, all ternate. Lts. linear, folded, silky. Branches angular, crowded, opposite. Fl. few, terminal. Cal. downy. **S.** 6, 7. *Dry.* Couzon near Lyons. Pyr.

B. *All L. simple. Upper Lip of Calyx bipartite.*

i. *Plant thorny.*

12. **aristata.** L. lineari-lanceolate, villous. Spines axillary, digitate. Flowering Branches not spinescent. Rac. terminal. Fl. nearly hairless. Keel twice as long as standard. Seed 1. Leg. rhomboid, hairy. **s.S.** 5–7. *Openings of woods.* Sic.

13. **sylvestris.** Scop L. lineari-subulate. Hairs of Stem adpressed. Spines axillary, branched, slender, terete, finely striate. Rac. terminal, standing alone. Teeth of Cal. lineari-subulate, reaching to two-thirds of keel, nearly equalling wings and standard. **S.** 5, 6. *Open stony.* Sty. Carniola. Friuli.

14. **arcuata.** Koch Stems tufted, simple, leafy from base. L. linear. Spines branched, spreading, bowed, 4-edged. Rac. solitary, terminal. Cal., Standard, and Keel silky. Teeth of Cal. as long as its tube. **s.S.** 5, 6. *Rough.* Near Trieste.—Koch.

15. **dalmatica.** Bart Stem tufted, simple, leafy from base. L. lineari-lanceolate. Spines branched, spreading, rigid, 4-edged. Rac. solitary, terminal. Cal. hirsute. Teeth twice as long as tube. Keel and Tip of Standard pubescent. Bracts linear. **s.S.** 6, 7. *Dry rocky.* Istrian Islands.—Koch.

16. **hispanica.** L Main Stem leafless, with ✓

long branches. L. lanceolate, villous. Spines decompound. Flowering Branches unarmed. Rac. several together, terminal. Keel villous, as long as smooth standard. Leg. oval, somewhat hispid, 2–4-seeded. **S.** 5, 6. *Stony hills.* mdt. Fr.

17. **germanica.** L Main Stem leafless. L. lanceolate, somewhat hirsute. Spines simple, or with short branches. Flowering Branches unarmed. Rac. terminal. Fl. somewhat villous. Keel exceeding standard. Leg. ovate, 2–4-seeded. **w.** 5, 6. *Woody. Koch mentions a variety without thorns.*

18. **anglica.** L Smooth. L. ovato-lanceolate. Spines simple. Flowering Branches unarmed. Rac. several on upper part of stem, few-flowered, terminal. Keel exceeding standard. Leg. ovato-cylindrical, many-seeded. **w.** 5, 6. *Heaths.* Eng. n. Fr. n. G.

19. **corsica.** DC Quite smooth. L. lineari-lanceolate. Stip. somewhat spinescent. Flowering Branches spinescent, and furnished with spines which are mostly simple. Fl. axillary, solitary, stalked. Keel as long as smooth standard. Leg. broad on the back, 4–8-seeded. **S.** 5, 6. *Sandy coasts.* Cors.

20. **Scorpius.** DC L. very few, oblong. Spines branched, spreading, striate. Fl. on the spines hairless. Keel as long as standard. Leg. 2–6-seeded. **S.** 5. *Dry.* mdt. Fr.

ii. *Unarmed.*

a. *Flowers in lateral racemes.*

21. **monosperma.** Lam Erect, branched. L. very few, lineari-oblong, with adpressed hairs. Rac. few-flowered. Pet. silky, nearly equal. Leg. ovate, inflated, membranous, 1-seeded. **S.** 4, 5. *Sandy shores.* s. w. Sic.

22. **sphærocarpa.** Lam Branches rod-like. L. few, linear, nearly hairless. Rac. many-flowered. Pet. hairless, equal. Leg. ovate, somewhat fleshy, 1–2-seeded. **S.** s. Eur.—DC.

b. *Flowers in terminal racemes.*

23. **sagittalis.** L Stem 2-edged, somewhat winged, jointed. L. ovato-lanceolate. Fl. in an ovate terminal raceme. Cor. hairless, except a villous line on keel. **w.** 5, 6. *Grassy banks. Not in Brit.*

24. **tenuifolia.** "Stem weak. Branches terete, striate, nearly erect. L. linear, 1-nerved, hairless. Fl. and Fr. hairless. **S.** Piedmont. Differs from *G. tinctoria* only in its smaller flowers."—DC.

25. **tinctoria.** L Root creeping. Stems diffuse. Branches terete, striate, erect. L. lanceolate. Hairs adpressed. Fl. hairless. Seeds 4–7. **w.** 7, 8. *Hill pastures.* Delarbre

26. **elatior.** Koch "Stem erect, branched at top. Branches terete, equally striate, somewhat angular above; downy towards the top. Stip. subulate, very small. Cor. and Leg. without hairs. **s.S.** 6, 7. *Dry pastures.* adr. G."—KOCH.

27. **anxantica.** "Quite smooth. Stems diffuse. Branches angular. L. elliptico-ovate, somewhat coriaceous, veiny. Fl. in racemes. Cor. three times as long as calyx. Seeds 8–10. **S.** Valle Anxanti. K. Nap."—TEN.

28. **ovata.** Waldst "Stem terete, with raised lines. Stem and L. covered with spreading hairs. L. lanceolate, elliptic, or ovate. Stip. subulate, very small. Cor. smooth. Keel as long as standard. Leg. very hirsute, 6, 7. *Dry hills.* lower Styria."—KOCH. *This and the four preceding are perhaps forms of one species.*

29. **ætnensis.** "Branches terete, rod-like, striate. Flowering Branches naked; younger ones and the few very short, linear L. silky. Lower Lip of Cal. obscurely 3-toothed. Keel silky at top, exceeding the downy standard. Leg. oblong, compressed, somewhat falcate, downy, 2–6-seeded. **l.S.** 6, 7. *Open dry.* e. and n. of Ætna."—GUSS.

30. **sericea.** Wulf Decumbent. Branches nearly terete. L. lineari-lanceolate, silky beneath, not margined. Fl. 3–4, in a sort of raceme. Teeth of Cal. oblong, acuminate. Pet. silky, nearly equal. **S.** 6, 7. *Rocky.* Trieste. *abundant.*

31. **scariosa.** Vivian Smooth. Stem ascending, round. Young branches 3-edged. L. lanceolate; lower obovate. Margin scariose. Cor. three times as long as calyx. *Stony.* s. G. It.

c. *Flowers solitary, axillary, nearly or quite sessile.*

32. **mantica.** Pollini Stems numerous, prostrate, striate, leafy, hirsute. L. lineari-lanceolate. Fl.-stalk shorter than L. Cor. hairless. Leg. silky. **S.** 5. *Wood* del Mantico, three miles from Verona. *Var. of* G. tinctoria? R. Sprg

33. **purgans.** DC Erect. Branches terete, striate; at the time of flowering nearly leafless. L. very few, lanceolate, sessile. Fl. on short stalks. Pet. hairless. **S.** 5, 6. *Barren hills.* Cev. Auv.

✓ 34. **cinerea.** D.C Erect. Branches straight, striate. L. small, lanceolate. Pet. nearly equal. Keel silky. Standard nearly smooth. Hairs of L. and Leg. adpressed. **S.** 5, 6. *Southern slopes.* Dau. Prov.

35. **humifusa.** Vill Procumbent. Branches twisted, tubercled, rigid, and somewhat spinescent. L. lineari-lanceolate, hairy. Pet. nearly equal. Keel silky. Standard nearly smooth. Pod downy. Seeds 4. **S.** 5, 6. *Sand.* Gap.

✓ 36. **pilosa.** L Stem procumbent, branched, striate, tubercled, leafy. L. lanceolate, silky beneath. Keel and Standard silky. Leg. downy, many-seeded. **s.S.** 5. *Dry hills.*

C. *L. simple. Upper Lip of Calyx bidentate.*

37. **humilis.** Stems prostrate, diffuse. Branches angular, striate, villous. L. ovali-oblong, acute, hairy on both sides. Fl. axillary. Stalks hardly longer than calyx. Calyx subcylindrical, hairy. Teeth setaceous. **w.** Piano di Ruggia, Lucania.

[illegible]

38. **diffusa.** "Stem and oblongo-lanceolate L. smooth, except that the latter are somewhat ciliate. Flower-stalks three times as long as calyx, surrounded by a bundle of L. Cal. and Cor. hairless. **S.** 5, 6. *Grassy slopes.* l. Sty. Carniola. Trieste."—Koch. v of 40 koch.

✓ 39. **Halleri.** Reyn. "Stem and under side and margin of oblongo-lanceolate L. branched. Flower-stalks and Cal. covered with spreading hairs. Flower-stalks three times calyx; from a bundle of L. Cor. hairless. **S.** 5–7. *Stony hills.* w. Sw. *rare.*"—Koch. Lorr. Burg.

✓ 40. **procumbens.** Wk v of 40 "L. oblongo-lanceolate, covered underneath and on the margin, as well as the branches and calyces, with adpressed hairs. Flower-stalks three times calyx, from a tuft of L. Cor. hairless. **S.** 4–6. *Open stony.* Mor. l. Aus. Pays de Vaud."—Koch. *These three are probably varieties of one species.*

167. SPARTIUM L

✓ 1. **junceum.** L Branches opposite, rod-like, flowering at top. **S.** 5, 6. s. Eur.

168. CYTISUS.

A. Unarmed. Cal. campanulate. Leg. not dilated at the back.

- **i.** Fl. in racemes. Sp. 1–8.
- **ii.** Fl. axillary. Sp. 9–12.

B. Very thorny. Upper part of very short Cal. carried off with the opening flower. Sp. 13–15.

C. Cal. tubular, nearly cylindrical.

- **i.** Plant thorny. Sp. 16.
- **ii.** Plant without thorns. Sp. 17–23.

D. Cal. obconical; upper lip deeply divided. Sp. 24.

A. *Unarmed. Calyx campanulate. Legume not dilated on upper suture.*

i. *Flowers in racemes.*

1. **albus.** Branches terete, rod-like. L. sessile, simple and ternate, very few. Lts. lineari-oblong, silky. Fl. fasciculate, disposed in long racemes. Leg. 2-seeded, very villous. **S.** Monte Vergine, K. Nap.

2. **Laburnum.** L Hairs adpressed. Branches terete. L. stalked, alternate. Lts. ovato-lanceolate. Rac. pendent. Leg. linear, many-seeded, rectangularly keeled on upper suture. **l.S.** *Woody hills.* Malesherbes. Estampes. Nancy. s. G. It. ✓

3. **alpinus.** Mill Hairs spreading. Branches terete. L. stalked, all ternate. Lts. ovato-lanceolate. Rac. pendent. Leg. hairless, few-seeded. Keel of the upper Suture winged. **l.S.** 5, 6. *Woody hills.* Sw. Tyr. Cul. ✓

4. **ramentaceus.** Sieber Rac. ovate, erect. Upper lip of Cal. divided to base. Standard smooth. Keel downy. Leg. smooth. Flower-stalk with a large but caducous bract in the middle. **S.** 5. *Woods on coast* between Duino and Monfalcone.

[I put this here in compliance with Koch, but the deeply-divided upper lip of calyx makes me suspect it is out of its place. Koch's characters of the two genera are—*Genista*, "Stigma introrsum declive;" *Cytisus*, "Stigma extrorsum declive." I have followed DC.]

5. **sessilifolius.** L Hairless. Branches terete. Floral L. nearly sessile. Lts. ovate. Rac. short, terminal, erect, about 6-flowered. Bracts 3. Upper Lip with two minute teeth. **S.** 5, 6. *Woods and heaths.* s. Eur. ✓

6. **nigricans.** L Hairs adpressed. Branches terete, rod-like. L. stalked. Lts. elliptic. Rac. long, terminal, erect, many-flowered. Bracts 0. Teeth of Cal. minute. **S.** 6, 7. *Heaths and dry woods.* e. G. Pdm. Vall. ✓

7. **triflorus.** L'Herit Hirsute. Branches terete. All L. stalked. Lts. obovato-elliptic. Fl. ✓

axillary, stalked, ternate, forming a sort of raceme at the tops of the branches. Bracts 0. Teeth of Cal. small. Leg. villous. **S.** 4. *Hill thickets.* mdt. Fr. Rome. Nap. Sic.

8. **æolicus.** "Stem tall, erect. L. stalked, ternate, somewhat acute; the younger with a silvery silkiness on both sides. Stalks axillary, clustered, 1-flowered, collected into a terminal raceme. Cal. nearly globose, densely villous; upper lip with two teeth; lower entire. Leg. broadly linear, hairless, somewhat falcate. **S.** 3, 4. *Volcanic rocks.* Lipari Islands."—Guss.

ii. *Flowers axillary.*

9. **affinis.** "Downy. Branches angular. L. nearly sessile. Lts. obovate. Fl. axillary, stalked, ternate. Sic."—Guss. *from* Presl.

10. **glabrescens.** Sartorelli Fl. axillary, crowded, *from the same bud with the bundles of L.* (Leg. smooth, Rchb.) Stalks four times as long as calyx. Bracteole linear. Stems diffuse. Under side of L., Stalks, and Cal. covered with adpressed hairs. **S.** *Rugged mountains.* Ticino. Corni di Canzo.

Spartium 11. **arboreus.** Desf Branches striate, hairless. L. stalked, all ternate. Lts. obovate, downy beneath. Fl. crowded. Stalks nodding. No Bract at base of calyx. Leg. silky. **l.S.** or **s.T.** Monte Gargano.

12. **scoparius.** Link Branches angular. L. stalked; uppermost simple. Lts. oblong. Fl. axillary, solitary, stalked. Leg. hairy on margin. ✓

B. *Very thorny. Calyx circumsciss (bursting, not opening, as the flower expands). The upper suture of the Legume dilated.*

Lam [illegible] Tourn [illegible]

13. **spinosus.** Branches angular. Lts. obovato-elliptic. Leg. hairless, somewhat thickened on both sutures. Fl. lateral, fasciculate. (Bracts trifid, Guss.) **l.S.** *Coasts of* Mediterranean. ✓

14. **lanigerus.** DC Branches striate. Lts. obovato-elliptic. Leg. woolly, thickened on both sutures. (Bracts truncate, Guss.) **S.** 3, 4. *Very dry hills.* Alicata and Siculiana in Sic. Naples.

15. **infestus.** Branches angular. Lts. obovate. Leg. silky. Lower Suture not thickened. Bracts small, entire or somewhat 3-lobed. **S.** 4, 5. *Barren calc. hills.* Sic. *common.* Calabria.

C. *Calyx nearly cylindrical, 2-lipped.*

i. *Plant thorny.*

16. **spinescens.** Sieber Branches silky. Lts. elliptic, acute at each end, silky. Fl.-stalks 1–2, axillary, short. Cal. silky. **S.** 5, 6. *Rocks.* Isle of Cherso. Capri. Abruzzi. Monte Gargano.

ii. *Plant unarmed.*

17. **hirsutus** L. Decumbent. Hairs spreading. Branches terete, rod-like. Lts. obovate, villous beneath. Fl. crowded, lateral, on very short stalks. Cal. and Leg. hirsute. **s.S.** 5, 6. β elongat *Stony.* Boh. s. Eur.

18. **biflorus.** ~~L~~ Herit (*Ratisbonensis* of Koch.) Schaeffer Procumbent, silky, the hairs everywhere adpressed. Fl. lateral, usually in pairs, on short stalks. **w.** 4, 5. *Hill meadows.* Bav. and e. G. *The* C. biflorus *of Tenore, which is described as sometimes spinescent, is perhaps a different species.*

[illegible] Scop

19. **prostratus.** Prostrate. Hairs spreading. Lts. obtuse, hirsute. Fl. on the shoots of the year terminal; on those of the preceding year lateral. No Bracts on lateral flower-stalks. **S.** 5, 6. *Rugged hills.* Carniola. s. Tyr.

20. **austriacus.** L. Erect. Branches terete, rod-like, adpressedly pubescent, as well as L. Lts. obovato-lanceolate. Fl. terminal, in an umbel-like head. Outer Stalks with bracteoles. Cal. and Leg. somewhat villous. **S.** 7, 8. *Rough woods.* Austria. Moravia. Bohemia.

21. **supinus** L. Decumbent. Branches terete. L. obovate, somewhat hairy beneath. Hairs spreading. Fl. 2–4, stalked, subterminal. Cal. and Leg. somewhat villous. **w.** 5, 6. *Heathy.* Vienna. Dau. Rheims. Fontainebleau. ✓

22. **capitatus.** Jacq Erect. Branches straight, hispid. Lts. obovato-elliptic, villous. Fl. crowded at the tops of the branches. Cal. and Leg. villous. **w.** 6. *Open woods.* e. G. s. Fr. *Differs from* C. supinus *by its much larger and more numerous flowers and more villous calyx.* ✓

23. **purpureus.** Scop Ascending. Branches, L., and Cal. with few or no hairs. Fl. lateral, usually in pairs, purple! Cal. and claws of Pet. fringed. **S.** 4–6. *Hills.* s. e. Alps. ✓

D. *Calyx obconical. Upper Lip deeply divided. Corolla hardly exceeding calyx.*

24. **argenteus.** L Decumbent. L., Cal., Cor., and Leg. silky. L. stalked. Lts. oblongo-lanceolate. Fl. 3–4, terminal. **w.** 4, 5. s. Fr. adr. G. It. ✓

169. ADENOCARPUS. D C

1. **intermedius.** Cal. glandular. Middle division of Lower Lip longer than lateral, and far exceeding upper. Standard nearly smooth. **s.S.** Cal. *Query if distinct from the following.* complicatus Gay?

2. **divaricatus.** Cal. glandular. Middle division of Lower Lip longer than lateral, and far exceeding upper. Standard densely pubescent. **S.** 7. *Open heaths.* w. Fr. Rome.

3. **Bivonæ.** "Cal. glandular. Divisions of Lower Lip nearly equal, exceeding upper. Fl. crowded. Branches and Standard hirsute. **S.** 7, 8. *Dry woods.* Ætna."—Guss. *from* Presl.

4. **commutatus.** Guss Cal. pubescent, without glands. Middle division of Lower Lip longer than lateral, and far exceeding upper. (Rac. long, many-flowered.) L. folded. **S.** 6, 7. *Sandy hills.* Sic. *Rocky.* Cevennes.

grandiflorus Boiss
5. **telonensis.** Robert Cal. pubescent, without glands. Teeth of Lower Lip nearly equal, and but little exceeding upper. Rac. short, few-flowered. **s.S.** 5, 6. s. Fr.

170. ONONIS. L

- **A.** Fl. stalked, axillary, yellow.
  - **i.** Perennial. Plants more or less woody. Sp. 1–4.
  - **ii.** Annual, viscid.
    - **a.** Upper L. simple. Sp. 5–9.
    - **b.** L., even of flowering branches, nearly all ternate. Sp. 10–12.
- **B.** Fl. stalked, axillary, purple.
  - **i.** Shrubby. L. ternate. Sp. 13–15.
  - **ii.** Perennial, not properly shrubby. Sp. 16, 17.
  - **iii.** Annual. Sp. 18–21.
- **C.** Fl. axillary, sessile or nearly so, purple or white.
  - **i.** Perennial, somewhat woody. Sp. 22–24.
  - **ii.** Annual. Sp. 25–29.
- **D.** Fl. axillary, sessile or nearly so, yellow.
  - **i.** Woody. Sp. 30–33.
  - **ii.** Annual. Sp. 34.

A. *Flowers axillary, stalked, yellow, generally with purple Striæ.*

i. *Perennial. Plants more or less woody.*

1. **arachnoidea.** Lapey Somewhat shrubby, villous, not viscid. L. pinnately ternate; uppermost mostly simple. Lts. ovali-oblong. Stalks 1-flowered, awned. **s.S.** *Torrents.* e. Pyr. Elne. Perpignan. v of 2. Gr.G.

2. **Natrix.** L. Shrubby, pubescent, viscid. L. ternate; the uppermost sometimes simple. Lts. oblong. Stalks 1-flowered, exceeding L. Awn as long or longer than upper part of Stalk. Leg. drooping, linear, turgid. **s.S.** 7. *Open.* s. Eur.

[I have a plant from the Pyrenees, given me by M. Maille, with some of the L. pinnate, which probably belongs to this species.]

3. **ramosissima.** Desf Somewhat shrubby at base, much branched, pubescent, viscid. L. all ternate. Lts. lineari-obovate, serrate, acuminate. Stalks 1-flowered, exceeding L. Awn longer than upper part of stalk. **s.S.** or **p.** 6, 7. *Sandy shores.* Mdt.

4. **arenaria.** Somewhat shrubby at base, much branched, pubescent, very viscid. L. all ternate. Lts. lineari-obovate. Stip. lineari-lanceolate, with long acumen. Stalks 1-flowered, falling short of L. Awn short. **s.S.** or **p.** *Shore* at Maguellone, near Montp. *The length of the awn, that of the flower-stalk, and the purple stripes on the corolla, vary in these three species; but the difference of habit seems to show that* O. Natrix *should be kept separate from one or both of the latter.*

ii. *Annual, with viscid pubescence.*

a. *Upper L. simple.*

5. **viscosa.** L Middle Lts. the largest. Stip. as long as L.-stalk. Stalks 1-flowered. Awn exceeding L. Cor. exceeding calyx. **a.** 6. *Dry.* Hyères. Montp.

6. **polymorpha.** Erect, hairy, somewhat viscid. Lts. elliptic-oblong, with short teeth above middle. Stalks 1-flowered, sometimes awned, at last exceeding L. Leg. 4–5-seeded. **a.** *Dry.* Calab. Iapygia.—Ten. "*Differs from* O. pubescens *in having more seeds in the capsules.*"—Ten.

7. **breviflora.** D.C Hairy, somewhat viscid. Lts. of lower L. oval, serrate; middle largest. Stip. serrate, nearly as long as L.-stalk. Stalks 1-flowered, equalling L. Awn long. Cor. somewhat shorter than divisions of calyx. **a.** 6. *Dry hills.* Frejus. Sic.

β. Stalks twice as long as L. Cor. as long as calyx. Palermo.

8. **sicula.** Hairy. Upper L. simple. Lts. lineari-oblong, acute, serrate at top. Stip. nearly entire, equalling L.-stalk. Stalks 1-

flowered, awned, equalling L. Cor. shorter than calyx. Leg. drooping, twice as long as calyx. **a.** 4, 5. *Dry calc. hills.* Sic.

✓ 9. **pubescens.** L Erect, hairy. Upper L. simple. Lts. ovali-oblong. Stip. large, acuminate, entire. Stalks 1-flowered, awnless, shorter than L. Cal. broad, striate. (Leg. few-seeded, Ten.) *Standard sometimes purplish.* **a.** 5. ? Bosquet de Mireval at Mtp. Avignon.

b. *All L. ternate.*

10. **longearistata.** Hairy, somewhat viscid. Upper L. ternate. Lts. obovato-elliptic, serrulate, obtuse, the middle larger. Stip. entire. Stalks 1-flowered, shorter than L. Awn long. Divisions of Cal. linear, exceeding corolla, shorter than legume. **a.** 5, 6. *Grassy hills.* Pal. Cat. "*This and* breviflora *are perhaps varieties of* O. viscosa."—Guss.

11. **Sieberi.** Hairy, somewhat viscid. Upper L. ternate. Lts. elliptic-oblong; lower bluntly, upper very acutely serrate above the middle. Stip. entire. Stalks generally 1-flowered; at last exceeding L. *Awn not constant.* Divisions of Cal. lanceolate, somewhat shorter than corolla and 4–6-seeded legume.—Guss. "*This and* polymorpha *are perhaps varieties of* O. pubescens."—Guss.

✓ 12. **ornithopodioides.** L Hairy. L. all ternate. Lts. oblong. Stalks 1–2-flowered, awned. Leg. linear, cernuous, contracted between the seeds. **a.** 6. *Dry calc. hills.* Capri. s. It. s. Sic. Cors.

B. *Flowers stalked, axillary, purple or white.*

i. *L. ternate* (*except in* O. oligophylla). *Plant shrubby.*

✓ 13. **rotundifolia.** L Lts. ovate, dentate. Stip. separate. Stalks 2–3-flowered, awned. Bracts 0. (Leg. nodding, linear, turgid, Koch.) **s.S.** 5, 6. Alps and Pyr.

14. **tribracteata.** "Lts. ovate, dentate. Stalks about 3-flowered. Cal. triphyllo-bracteate. **s.S.** Carinthia? *Perhaps an ill described form of the former.*"—DC.

✓ 15. **fruticosa.** L Lts. sessile, lanceolate, serrate. Stip. united into a 4-awned sheath; the uppermost leafless. Stalks 3-flowered, racemose. **s.S.** 6, 7. *Open hills.* Dau. Prov.

ii. *Perennial, not properly shrubby.*

✓ 16. **cenisia.** L Somewhat shrubby at base. Stems diffuse, prostrate. L. ternato-digitate. Lts. cuneate, serrate. Stip. serrate. Stalks 1-flowered, awnless, exceeding L. **p.** 7, 8. *Pastures.* w. Alps.

17. **oligophylla.** Stems ascending, diffuse, villous. L. simple, roundish, serrulate. Stip. ovate, serrulate. Fl. axillary, solitary. Stalks awnless, exceeding L.; the terminal ones somewhat racemose. Cal. villous, shorter than corolla, as long as legume. **p.** or **a.** *Clayey fields.* Sic. *common.*

iii. *Annual.*

18. **reclinata.** L Diffuse. Lts. obovate, serrate, hairy, viscid. Stip. broadly ovate, acute, serrate. Stalks 1-flowered, as long as L.; with a small bract near the summit, but no awn. Divisions of Cal. lanceolate, exceeding corolla. (Leg. nodding, linear, turgid, Koch.) **a.** 5. *Coasts.* Mdt. ✓

19. **mollis.** Savi Somewhat erect. Lts. oblongo-obovate, serrate at top. Stip. nearly entire. Stalks awnless, 1-flowered, equalling L. Divisions of Cal. linear. Cal., Cor., and at last Leg., equal. **a.** 5. *Coasts.* Cors. Sic.
V of 18 q.v.

20. **Schowii.** Lts. oblongo-obovate, serrate. Stip. serrate. Stalks 1-flowered, awnless, hardly as long as calyx, forming an ovate raceme. Cal. shorter than corolla and legume. **a.** 4, 5. *Open hills.* s. Sic. Pal.

21. **Cherleri.** L Hirsute. Lts. oblongo-cuneate, serrate at top. Stip. nearly entire. Stalks awnless, 1-flowered, shorter than L., in a crowded raceme. Cal., Cor., and Leg. equal. **a.** 5. *Dry stony.* mdt. Fr. Nice. Cors. ✓

C. *Flowers axillary, sessile or nearly so, purple or white.*

i. *Perennial, somewhat woody.*

22. **hircina.** Jacq Erect. Branches unarmed, everywhere villous, somewhat viscid. Lts. oblongo-lanceolate, acute, denticulato-serrate. Fl. usually in pairs, forming a dense spike. Divisions of Cal. villous, exceeding erect, ovate legume. **w.** 6, 7. *Meadows and uncult.* G. Dau. ? ✓

23. **repens.** L Stems rooting at base, diffuse. Branches everywhere pubescent. Lts. ovato-subrotund, glandular on both sides, serrate. Fl. solitary. Divisions of Cal. exceeding legume. **w.** 6, 8. *Pastures.* ✓

24. **spinosa.** L Stems with one or two smooth lines. Lts. oblongo-cuneate at base, nearly entire. Fl. solitary. Leg. erect, ovate, as long as calyx. **w.** 5. 6. ✓

β. *antiquorum*, Linn. Branches nearly hairless.

Masquillieri

serrulata Forsk **ii.** *Annual.*

25. **diffusa.** Ten "Stems diffuse, downy, whitish. L. ternate. Lts. oblongo-cuneate, serrate, with very short, triangular teeth. Stip. lanceolate, serrate. Fl. in a spike-like raceme. Cal. scariose, shorter than corolla, as long as legume. **a.** 5, 6. *Sandy shores.* Pozz. Cal. s. Sic."—Ten. Cors.

26. **Dehnhardtii.** "Stems villous, viscid, erect. L. ternate. Lts. biserrate with long setaceous teeth; lower orbicular, retuse. Stip. ovate; upper obovato-cuneate, acutely biserrate. Fl. in a head-like spike. Cal. scariose, shorter than corolla, longer than legume. **a.** *Sandy shores.* Fusaro, Ischia. Gargano. Viesti."—Ten.

✓ 27. **mitissima.** L Stems erect, somewhat hairy, whitish. Lts. oval, serrate. Upper L. simple. Fl. in a long spike, with scariose, stipulary bracts. **a.** 4, 5. *Clayey fields.* Cors. Sic. Cal.

✓ 28. **alopecuroides** L Stem solitary, erect, somewhat hairy. L. simple, elliptic, obtuse, somewhat serrate. Stip. very large, somewhat serrate. Fl. in a dense spike. Divisions of Cal. hispid, about twice as long as corolla or legume. **a.** 5, 6. *Clayey fields.* Cors. Cal. Sicily.

29. **monophylla.** Stem solitary, erect, somewhat villous. L. simple, sharply serrate. Stip. very large, sharply serrate. Fl. in a dense spike. Divisions of Cal. villous, equalling corolla. **a.** *Dry fields.* Cal.

D. *Flowers sessile or nearly so, yellow.*

i. *Perennial, somewhat woody. Most of L. ternate.*

? ✓ 30. **arragonensis.** Asso Shrubby. Lts. subrotund, serrate, hairless. Fl. in pairs in a leafless raceme. Cal. villous, half as long as corolla. **s.S.** Benasque in Pyr.

✓ 31. **striata.** Gouan Prostrate, diffuse, branched. Lts. obovato-cuneate, striate, somewhat rough, serrate. Stip. serrate. Fl. in heads. Cor. exceeding the hirsute, viscid calyx. **p.** or **w.** 6, 7. *Dry mountains.* Pyr. Cev. Alps of Prov. and Dau.

✓ 32. **Columnæ.** All Pubescent. Stems somewhat cespitose. Uppermost L. simple. Lts. obovato-oblong, serrate. Stip. serrate. Fl. in a leafy spike. Expanded base of Teeth of Cal. longer than subulate part. **p.** or **w.** 5–9. *Sandy and calc. hills.*

floral leaves not exceeding flowers head Gr & G

33. **minutissima.** L Hairless, somewhat cespitose. Lts. obovato-cuneate, serrate. Stip. subulate, entire. Fl. in a leafy spike? Expanded base of Teeth of Cal. much shorter than subulate part. **p.** or **w.** 4, 5. *Dry calc.* s. Fr. *abundant.* Sic. ✓

villosissima

ii. *Annual. L. simple.*

34. **variegata.** L Hairless, diffuse. L. obovate, striate, serrate. Stip. broad, somewhat sheathing, serrate. Cor. exceeding pubescent calyx. **a.** 5. *Sandy shores.* It. ✓

171. ANTHYLLIS L

A. *Calyx hardly inflated. Legume sessile, as long as calyx.*

1. **cytisoides.** L Shrubby, much branched, unarmed. Fl. in the upper axils forming an interrupted spike. Cal. hirsute. L. simple or ternate; the middle Lt. much largest. **s.S.** *Rocky.* Toulon. La Ciodad. Perpignan. ✓

2. **Hermanniæ.** L Shrubby. Branches spinescent. Heads few-flowered, nearly sessile in the upper axils. L. nearly sessile, simple or ternate. **S.** 4. 5. *Very dry calc.* Cors. s. Sicily.

Dorycnopsis Gerardi Boiss

3. **Gerardi** L Herbaceous, diffuse. Heads stalked, without bracts, many-flowered (15–20 flowers). L. pinnate. **p.** 6, 7. *Stony woods.* St. Tropez. Rous. Cors. ✓

B. *Calyx bladder-like after flowering.*

4. **Erinacea** L Shrubby. Branches spinescent. L. very few, simple. Heads stalked, bracteate, few-flowered. **S.** 5. Cors. Pyr. on borders of Catalonia. ✓

5. **Barba Jovis** L Shrub. Silky, unarmed. Heads globose, many-flowered, not exceeding bracts. Lts. 9–13, lineari-oblong, equal. **S.** 5, 6. *Rocky shores.* Prov. It. *not common.* ✓

6. **montana** L Herbaceous, cespitose. Heads solitary, on long stalks, bracteate. Lts. 15–19, equal, ovali-oblong, villous. **p.** 5, 6. *Grassy mountains.* Alps. Apenn. ✓

7. **Vulneraria** L Herbaceous. Heads stalked, generally double, bracteate. Lts. 5–13; terminal much the largest. **p.** 5–7. *Dry pastures.* ✓

8. **tetraphylla** L Herbaceous, procumbent. Leg. with transverse divisions. Heads axillary, sessile, few-flowered. Lts. 4: three very small, and the terminal large. **a.** 3, 4. *Dry hills.* s. Fr. It. ✓

Subtribe 2. Trifolieæ.

172. MEDICAGO L.

The points of comparison taken by different authors in determining the species of this genus are so various, and expressed in such different terms, that I find it impossible to reduce them satisfactorily to an analytical form. I, however, publish the following attempt at grouping, as the best I have been able to effect; thinking it may be useful to the student, though I feel uncertain as to the constancy of some of the characters, and am aware that some of them so run into others, that he may be puzzled as to which he ought to choose.

I have described the spines with reference to the helix, and not to the legume in its lengthened form. *Adpressed*, if turned up and down, close to the helix; *reflexed*, turned also up and down, but not lying close against the turns of the helix; (both these appear to be sometimes called divaricate;) *spreading*, when they are more open; *radiating*, when they nearly follow the direction of the width of the legume.

A. Legume somewhat leaf-like, reniform. Sp. 1, 2.

B. Legume curved, solid, open in the centre. Sp. 3–8.

C. Legume reniform, not open in centre, longitudinally veined. Sp. 9, 10.

D. Legume spiral, closed. Edge thin, unarmed. Sp. 11–17.

E. Legume spiral, closed. Edge thickened, 1-nerved, unarmed, or only slightly tubercled. Sp. 18–22.

F. Legume spiral. Outer suture 3-nerved, unarmed, or only slightly tubercled. Sp. 23–26.

G. Legume spiral, closed. Outer suture 3-nerved, armed with spines that are not grooved.

- **i.** Edges touching. Sp. 27–30.
- **ii.** Edges not touching. Sp. 31–36.

H. Legume spiral. Spines grooved.

- **i.** Back keeled. Sp. 37.
- **ii.** Back rounded. Base of Spines extending to the centre.
  - **a.** Legume not veined on margin. Sp. 38–40.
  - **b.** Legume veined all over. Sp. 41–46.
- **iii.** Back flattened, not occupied by the spines. Sp. 47–49.

I. Back 1-nerved. Spines grooved, arising from the back and from a lateral vein.

- **i.** Helix trencher-shaped. Sp. 50.
- **ii.** Helix ellipsoid or subglobose. Sp. 51–55.

A. *Legume somewhat leaf-like, compressed, reniform.*

1. **circinnata.** L. Margin of Leg. not winged, but furnished with branched, spine-like teeth. Lts. 5, entire; terminal very large. **a.** 3, 4. *Dry hills.* It. s. Fr. ✓ hab. of Anthyllis Vulneraria

2. **radiata.** L. Margin of Leg. winged, dentate. Lts. 3, obovato-denticulate. **a.** 6, 7. Nice. Narbonne. *Koch says,* "Anterior margin spinulose, posterior with a ragged fringe," *and makes no mention of a wing. Query, if the same plant.* **a.** 7, 8. *Fields.* Istria.

B. *Legume curved, solid, open in the centre.*

3. **procumbens.** Bess. Procumbent. Leg. nearly straight, reticulate. Seeds 2–6, irregularly cordate. Lts. oblongo-linear, dentate at top. Stip. dentate at base. **p.** 7–9. *Dry hills.* Boh. Dresd. (*Var. of* falcata, Koch.)

4. **falcata.** L. Decumbent. Leg. sickle-shaped, reticulate. Lts. oblong. Stip. subulate, quite entire. Rac. short, erect. Pedicels shorter than calyx, erect after flowering. **p.** 6, 7. *Dry meadows and banks.* ✓

5. **arborea.** L. Shrub erect, silky. Leg. annular. Seeds 2, 3. Lts. obovate. Stip. subulate, entire. **S.** 4, 5. Nice. Sorrento. ✓

6. **glutinosa.** Prostrate. Hairs viscid. Leg. (annular, Rchb.,) obscurely veined. Lts. obovato-cuneiform, somewhat retuse, obscurely dentate. Stip. lanceolate, somewhat dentate at base. (Rac. corymbose, Rchb.) **p.** 5, 6. *Stony meadows.* Mte. Spaceato. Trieste. *Not in Koch.*

7. **sativa.** L. Erect. Leg. somewhat spiral, finely reticulate, silky when young. Stalk shorter than calyx. Seeds irregular, *bay*. Lts. obovato-oblong, dentate. Stip. subulate, somewhat dentate. Rac. oblong, erect. **p.** 6, 7. *Meadows and borders.* ✓

8. **prostrata.** Jacq. Prostrate. Leg. somewhat spiral, finely reticulate. Seeds 2, exactly reniform, *black*. Pedicels twice calyx, refracted after flowering. Lts. linear. Stip. lineari-subulate, nerved, dentate at base. **p.** 6–8. *Open uncult.* Trieste. *abundant.* Carn. ?

C. *Legume reniform, thick, not open in the centre.*

9. **lupulina.** L. Procumbent. Leg. reniform, 1-seeded, longitudinally veined. Lts. obovato-cuneate, obtusely dentate. Stip. subulate, nearly ✓

entire. Spike erect, many-flowered. Cal. as long as wings and keel. **a.** 5–8. *Meadows and fields.*

β. *Willdenovii*, Bœnn. Leg. covered with jointed, glandular hairs.

10. **apennina,** J. W. Procumbent. Leg. subulate, spiral, 1-seeded? longitudinally veined? Lts. rhombeo-subrotund, acutely denticulate. Stip. ovate, deeply dentate. Rac. erect, dense, many-flowered. Cor. twice as long as calyx. **w. b.** ? 6. *Meadows.* Guadagnolo. *This is, perhaps, the* M. Willdenovii *of Gussone.*

D. *Legume spiral, closed. Edge thin, unarmed.*

11. **obscura.** Retz Leg. of 1 or 1½ turns, 2-seeded. Veins radiating, anastomosing in an irregular flexuose nerve near the outer margin. Stip. semiovate, acuminate, deeply dentate. Rac. many-flowered. **a.** 4, 5. *Sandy shores.* s. Eur.

β. *spinosa*, Guss. With a few setaceous Spines on the fruit. *Sand.* s. Sic.

12. **Helix.** Leg. of 2–3 close turns, 2–4-seeded. Veins radiating, uniting in a strong wavy nerve within the outer margin. Stip. somewhat semisagittate, lacero-dentate. Rac. 3–5-flowered. **a.** 4, 5. *Sandy hills and shore.* Nap. e. Sic.

β. *spinulosa*, Guss. With a few setaceous Spines on fruit. Cuma. Cape Miseno.

13. **scutellata.** All Leg. convex below, presenting its spiral edge on the upper face of ✓ helix. Veins numerous, prominent, reticulate. No lateral nerve. Stip. semisagittate. Stalks 1–3-flowered. **a.** 5, 6. Fiume. It.

14. **cuneata,** J. W. Leg. with 6–9 turns; 4 or 5 of which are nearly equal, forming an ellipsoid. Helix as long as broad. Veins without a lateral nerve, radiating. Lts. cuneate. Stip. setaceo-multifid. **a.** 6. Tivoli. *Query, if var. of* orbicularis.

15. **orbicularis.** All Leg. at first crooked; afterwards forming a very compressed, lentiform ✓ helix of 5–7 turns, of which the middle one is largest. No lateral nerve. Veins radiating. Seeds many, punctulato-rugose. Lts. obcordate. Stip. laciniate. Stalks 1–3-flowered. **a.** 4–6. *Fields.* s. Eur.

16. **marginata.** Willd Leg. compressed, flat on two sides. Turns about 6. Margins distant, with transverse veins, thickened towards the edge. Stalks 1–3-flowered, shorter than L. Stip. setaceo-pinnatifid. **a.** 5, 6. Fiume.—Koch.

17. **Soleirolii.** Dub Leg. plano-convex, longitudinally reticulate. Lts. rhombeo-obovate, denticulate, nervose. Stip. pinnatifido-dentate. Divisions setiform. Rac. of many *large* flowers. Divisions of Cal. villous, setaceous. **a.** Near Calvi in Corsica.

E. *Edge thickened, 1-nerved. No Spines.*

18. **suffruticosa.** Ram Prostrate, somewhat woody. Leg. *downy*, with about 2 turns. No lateral nerve. Veins slender, arcuato-reticulate. ✓ Seeds irregularly cordate. Lts. rhombeo-subrotund. Stip. semiovate, dentate. **p.** 6, 7. Barèges.

19. **leiocarpa.** Benth Prostrate, somewhat woody. Leg. smooth, of 2–4 turns, with strong longitudinally reticulate veins. Seeds nearly reniform. Stip. broadly lanceolate, nearly entire. **p.** 5. *Calc. hills.* Narb. Corbières.

20. **elegans.** Jacq Helix flat at each end, with 2 or 3 turns. Veins transversely reticulate. Margin obtuse. Lts. rhombeo-obovate. Stip. lanceolate, dentate. Stalks 2–4-flowered. **a.** 4, 5. *Open calc. hills.* Sic.

21. **striata.** Bast Leg. flat on two sides, hairless, somewhat muricato-tuberculate. Outer ✓ suture convex, 1-nerved. Helix longer than broad. Turns 3 or 4. to right! Stalks 1–6-flowered, exceeding L. Stip. ciliato-dentate. **a.** 4, 5. *Fields.* s. Coast of Sic.—Guss.

22. **tornata.** Willd Diffuse. Leg. truncate at each end. Outer suture flat. Helix longer than broad, hairless. Turns 5, 6, close. Seeds reniform, truncate, *orange colour.* Lts. rhomboidal ~~obo~~vate. Stip. laciniat ciliato-dentate. Stalks 1–5-flowered, exceeding L. **a.** 4, 5. *Coasts.* Sic.

+ β. *muricata.* Sic. standard = keel fruit twice as large as 21 keeled

F. *Legume spiral. Edge thick, 3-nerved, often with prominent veins or tubercles. Helix compact, the edges touching.*

23. **turbinata.** Willd Diffuse. Helix convex at each end. Margin lined. Lts. rhombeo-ovate. ✓ Stip. lanceolate, dentate. Stalks about 2-flowered. **a.** 4, 5. *Corn.* e. Sic.

24. **tuberculata.** Willd Procumbent. Helix ellipsoid, flattened at base. Turns 3–5. Veins none. Suture very thick, triangular, scaly when old. Tubercles or short spines swelling at base. Seeds reniform, truncate. Stip. lanceolate, dentate. Stalks 1–3-flowered. **a.** 4–6. *Cult.* Istria. s. and e. Sic.

25. **truncatulata.** Gart Helix cylindrical, compact. Suture with a broad keel. Spines re-

+ M. cylindracea D.C. differs fr. striata
cal. teeth longer than tube prod. cylindric
turning to left! turns 5 or 6
margin not keeled!

flexed, hardly exceeding groove of internerve. Lts. obovate. Stip. subulate, dentate. **a.** 4, 5. *Fields.* Sic.

26. **reticulata.** Benth Helix barrel-shaped, flattened at each end. Leg. obliquely reticulate. Back triangular, pitted, tubercled. Stip. laciniate. Fl. 2, 3. **a.** *Cult.* Near Cascastel in the Corbières.

G. *Back of Suture 3-nerved, spinous, Spines not furrowed.*

i. *Edges touching each other.*

27. **muricata.** Lej Prostrate. Helix subglobose, (outer suture nearly flat, GUSS.,) not furrowed. Spines conical. Seeds somewhat reniform, *bay.* Lts. rhombeo-ovate, dentate. Stip. ciliato-dentate, (or entire, GUSS.) (Margins of Turns not touching, KOCH.)

28. **sphærocarpa.** Bertol Helix subglobose, very compact. Outer Suture thick, flat, furrowed. Spines conical, short. Lts. rhombeo-obovate. Stip. laciniate. Stalks many-flowered. **a.** 4, 5. *Fields.* s. Eur.

29. **oliviformis.** "Villous. Helix cylindrico-ellipsoid. Outer Suture at last flattened, 1-nerved. Spinules thick, conical, straight. Stalks 1–2-flowered. Stip. dentato-ciliate. **a.** 4, 5. *Fields.* s. Sic."—GUSS. *The description indicates this to be very near to* M. sphærocarpa.

30. **Murex.** Willd Villous. Helix cylindrical, flat at each end, compact, hairless. Outer Suture broad, keeled. Spines subadpressed. **a.** 4, 5. s. Sic.

ii. *Edges not touching.*

31. **tribuloides.** Lam Prostrate, hairy. Helix cylindrical, of five turns. Leg. lacunoso-rugose, with radiating veins in the middle. Middle nerve narrow, rising above insertion of the thick, divergent, hooked, and generally grooveless spines. Stalks 1–2-flowered, much shorter than L. Standard twice as long as keel. Stip. laciniato-dentate. **a.** 4, 5. *Fields.* s. Eur. *Includes* M. Murex *of Gussone.*

Braunii Grg. ~~Rohde~~ not Ten.

32. **littoralis.** Helix cylindrical, compact. Suture broad, from the large, rounded, lateral nerves. Turns about 5. Spines radiating, very slightly grooved. Veins few, radiating, not prominent. Fl. 2–6. Standard equal to keel. Stip. ovate, setaceo-dentate. **a.** 4–6. *Sandy shores.* s. Eur. *Includes* M. arenaria.

33. **Gerardi.** Willd Prostrate. Helix compact, oblate, veinless, covered (with glandular hairs, GUSS.) with small points, and often with tufts of hairs. Suture thick, rounded. Upper spines not grooved, hooked. **a.** 4, 5. *Uncult.* s. Eur. *Includes* M. agrestis.

34. **neglecta.** "Villous. Helix globoso-ellipsoid, closely covered with glandular hairs, compact. Outer suture acute, pitted. Spines spreading. Stip. ciliato-dentate. Stalks 1-flowered, exceeding L. **a.** 4, 5. *Low fields.* Sic."—GUSS. *This and Sp.* 35 *are perhaps varieties of* M. Gerardi.

35. **rigidula.** Willd Prostrate. Helix cylindrical. (Spines hardly diverging, DC.) Lts. obovate. Stip. dentate at base. Stalks 2–3-flowered. **a.** s. Fr. *Gussone considers this as perhaps his* oliviformis; *Bentham, as a variety of* Gerardi; *Koch, of* tribuloides, *but the* rigidula *of Thulliers he puts to* M. Gerardi.

36. **marina.** L Densely tomentose. Helix cylindrical, rather loose. Margin obtuse. Midrib almost sunk between the lateral nerves. Veins oblique. Spines radiating, remote, sometimes wanting, not grooved. *Seeds yellow.* Lts. and Stip. quite entire. Fl. numerous. **p.** 5, 6. *Sandy shores.* s. Eur. *Koch says that the helix is open in the centre; I find it so only in the upper curves.* ✓

H. *Spines furrowed.*

i. *Back of Legume keeled.*

37. **lappacea.** Lam Helix loose, of 3–4 turns. Leg. obliquely reticulate. Suture thin, somewhat acute. Spines long, hooked. *Seeds yellow.* Lts. obcordate. Stip. ciliato-dentate. **a.** 4, 5. *Grass and fields.* Sic.

ii. *Back of Legume rounded. Base of Spines extending to centre.*

a. *Legume not veined on the margin.*

38. **minima.** Lam Helix spherical, somewhat loose, of 3–5 turns, all armed. Leg. hairy, veinless. Spines deeply grooved. *Seeds yellow.* Lts. obovate or obcordate. Upper Stip. nearly entire. Stalks about 3-flowered. **a.** 5, 6. *Dry grassy.* ✓

β. græca, DC. **b.** or **p.** Abruzzi.

γ. recta, GUSS. **a.** Leg. somewhat veined.

39. **laciniata.** All Helix globose, compact. Lateral Nerves small, close. Spines numerous, straight, hooked, grooved. *Seeds bay.* Lts. cuneato-linear, inciso-dentate, truncate. Stip. ciliato-dentate. **a.** 5, 6. Port Juvenal. ✓

40. **disciformis.** DC Helix trencher-shaped. Turns 5; the last without spines or veins. ✓

Middle Nerve narrow. Spines grooved, radiating; the lower deflexed. Lts. obcordate. Stip. dentate. **a.** 5, 6. *Uncult.* Osero. It.

b. *Legume veined all over.*

41. **flexuosa.** Smooth. Helix rather loose, of 2 turns, depressed. Leg. reticulate. Spines curved, short. Lts. obovate, retuse. Stip. ciliato-dentate. Stalks many-flowered. **a.** *Open hills.* Miseno. Matese.—Ten.

✓ 42. **apiculata.** Willd Helix depressed, of 2–3 loose turns. Leg. lacunoso-reticulate. Outer Suture thin, obtuse. Spines short, straight, divergent. *Seeds yellow.* Stalks many-flowered. Stip. pinnatifido-dentate. **a.** 4, 5. *Open grass.* Nice. Sic. *Var. of* denticulata? 5, 6. *Cult.* Ger.

✓ 43. **denticulata.** Willd Helix of 2–3 loose turns. Leg. lacunoso-reticulate. Spines numerous, spreading, hooked. Stip. pinnatifido-dentate. **a.** 5, 6. *Corn.* Rhine. Istr.

These three are probably one species.

✓ 44. **maculata.** Willd Helix somewhat oblate, rather loose, of 4–5 turns. Leg. longitudinally nerved. Spines numerous, curved, not hooked, spreading, grooved. Stalks 1–2-flowered. *Seeds yellow.* Fl. 3–5. **a.** 4–6. *Gravelly meadows.*

45. **Terebellum.** Willd Prostrate. Helix cylindrical, of 5 loose turns, flat at each end. Leg. reticulate. Spines short, straight, radiate. *Seeds black.* Lts. obovate, retuse. Stip. ciliato-dentate. **a.** 5, 6. *Fields and uncult.* Spa. mdt. Fr. Cors. Sic. v of 37. Gr & G.

✓ 46. **pentacycla.** DC Helix oblong, convex at each end. Turns 5. Leg. lacunoso-reticulate. Nerves nearly equal, rather close. Spines grooved, spreading, hooked. Stip. ciliato-dentate. Stalks 2–5-flowered. **a.** *Uncult.* Narb. Perp. Isl. of Hyères. v. of 37. Gr & G

iii. *Back of Legume flattened, not occupied by the spines. Helix ellipsoid, loose. Spines reflexed.*

47. **tenoreana.** DC (*cancellata* of Tenore.) Midrib of Leg. much dilated. Spines slender, subulate, slightly grooved. Veins indistinct. Stip. dentate. Stalks 2-flowered. **a.** 4, 5. *Rocky.* Sic. Capri.

48. **præcox.** DC Midrib of Leg. dilated. Spines curved, grooved. Veins prominent, longitudinal. Stip. ciliato-dentate. Stalks 1–2-flowered. **a.** 3, 4. Frejus.

✓ 49. **coronata.** Lam Helix small, ellipsoid, very loose. Midrib much dilated. Stip. lanceolate, entire. Stalks 4–8-flowered, far exceeding L. **a.** 5, 6. *Fields.* mdt. Fr.

I. *Back 1-nerved. Spines grooved, arising from the back and from a lateral vein.*

i. *Helix trencher-shaped.*

50. **muricoleptis.** Turns of Helix 4 or 5; the last without spines. Spines slightly grooved. *Seeds dark chocolate.* Stip. ciliato-dentate. **a.** 4, 5. *Pastures and uncult.* Rome. Sic.

ii. *Helix ellipsoid or subglobose.*

51. **ciliaris.** Willd Prostrate. Helix ellipsoideo-globose. Leg. membranous, coarsely reticulate. Margin dilated, lateral. Nerves very small (wanting, Koch). Spines conical, firm, at first spreading, slightly grooved. Seeds very large, *black.* Stip. ciliato-dentate. **a.** 4, 6. *Grassy coasts.* Sic.

52. **intertexta.** DC "Procumbent. Stalks about 2-flowered. Helix hairy, ovato-disciform? Leg. obliquely reticulate. Margin thin? Spines thick, straight, grooved at base, adpressed. Lts. obovate, dentate. Stip. ciliato-dentate. **a.** 5, 6. *Fields.* mdt. Fr. *According to Lam., perhaps a variety of* ciliaris."—DC.

53. **carstiensis.** Jacq Gr & G "Stalks many-flowered, about equalling L. Helix hairless, ovato-cylindrical. Turns about 5. Veins radiating in the middle, reticulate. Margin slightly channeled. Spines setaceous, straight, divergent. Stip. acutely dentate. Lts. obovate, retuse. **p.** 5, 6. *Rough hills.* Carniola. lower Styria. Carinthia. adr. G."—Koch. ✓

54. **crinita.** Helix ellipsoid, hairless, compact. Turns 5. Spines setaceous, straight, adpressed, exceeding helix. Lts. rhombeo-obovate. Stip. inciso-dentate. Sic. *Var. of* M. Echinus?—Guss.

55. **Echinus.** DC Prostrate. Helix subglobose. Turns 7, strongly veined. Spines curved, grooved, adpressed, exceeding helix, very numerous. Stip. lanceolate, somewhat ciliato-dentate. *Seeds black.* **a.** 4, 5. *Corn and grass.* Nice. Sic. and K. Nap.

173. TRIGONELLA. L

1. **Fœnum-græcum.** L Leg. falcate, twice as long as beak. Seeds about 20, large, ovoid. Fl. sessile, solitary or in pairs. Lts. denticulate. **a.** 6, 7. *Fields.* Mtp. The black fields in Mor.

2. **gladiata.** Stev (*prostrata*, DC.) Leg. falcate, longer than beak. Seeds 6 (about 10, Koch), ✓

small. Fl. sessile, solitary. Lts. acutely serrate. **a.** 6, 7. *Open stony.* mdt. Fr. Veglia.

3. **monspeliaca.** L Leg. crowded in a sessile umbel, curved, compressedly cylindrical, divaricate. Stip. lineari-subulate. **a.** 5, 6. *Dry.* Paris. s. Fr.

4. **polycerata.** L Leg. nearly sessile, in a sessile umbel, erect, nearly straight, linear. Stip. lanceolate. **a.** Nice. Prov. Lang.

5. **ornithopodioides.** DC Prostrate. Leg. compressed, somewhat falcate, twice as long as calyx. Fl. 2–4, in a stalked umbel. Lts. denticulate. Stip. entire, very acute. **a.** 6, 7. *Barren pastures.* Norm. Lorr. Anjou. Pyr. Eng. *rare.*

6. **hybrida.** Poarr Leg. stalked, falcate, reticulato-venose. Fl. 2–5, in a stalked raceme. Stip. denticulate. Lts. entire. **p.** 6. Corbières. Bayonne.

✓ 7. **corniculata.** L Erect. Leg. compressed, declined, somewhat falcate, transversely veined. Rac. many-flowered. Stem erect. **a.** 6, 7. *Uncult.* Prov. Nice. s. Dau. It. Fiume.

174. MELILOTUS. Tourn

A. *Legume beaked, and longitudinally nerved.*

1. **cærulea.** Lam Leg. oblongo-obovate. Seeds 2. Rac. subrotund, stalked. Fl. erect. Lower Stip. dilated at base. **a.** 6, 7. *Meadows* in the Wochein in Carniola.

2. **uncinata.** Ser Leg. ovate, 1-seeded. Beak curved. Fl. in a dense spike. **a.** Libourne near Bordeaux. n.

3. **littoralis.** Leg. attenuate at each end, transversely reticulate. Umbel stalked. (Stalks spinous, DC.) **a.** 4, 5. *Stony coasts.* Santa Croce near the Torre del Bracetto, s. Sic.

DC. joins these three to Trigonella.

B. *Legume lacunoso-rugose.*

4. **officinalis.** Willd Leg. ellipsoid, somewhat gibbous, mucronate. Seeds 2, unequally cordate, quite smooth. Wings equalling standard and keel. Teeth of Cal. unequal. Stip. entire, setaceous. Lts. oblongo-lanceolate, obtuse. **a.** 7, 8. *Waste.*

✓ 5. **dentata.** Pers Leg. ovoid, somewhat acute, compressed on the upper suture. Seeds 2, smooth. Wings shorter than standard, exceeding keel. Stip. inciso-dentate. Lts. oblongo-lanceolate, irregularly subspinuloso-serrate. **a. b.** 7–9. *Meadows and uncult.* e. G. "*Not the* Kochiana *of DC.*," Koch; *but the descriptions are similar.*

6. **arvensis.** Wallr Leg. ellipsoid, mucronate, hairless. Seed 1, oval, smooth. Keel shorter than wings and standard. Stip. setaceous, entire. Lts. of lower L. obovate; of upper nearly lanceolate. **p.** 6–8. *Fields.* Fr. ✓

7. **altissima.** Lois (*macrorhiza*, Koch.) Leg. ellipsoid, acuminate, hairy. Seed 1, broadly oval, finely dotted. Wings and Keel equalling standard. Stip. setaceous, entire. Lts. of lower L. oblong; of upper linear. **p.** 6–8. *Fields.* Fr. G. is 4.

8. **alba.** Lam Leg. subglobose, acuminate, hairless. Seed 1, oval, finely dotted. Wings and Keel shorter than standard. Stip. setaceous, quite entire. Lts. oblongo-lanceolate; of lower L. obovate. **b.** 7–9. *Uncult.* m. Eur. ✓

9. **parviflora.** Desf Leg. globose, very obtuse. Seed 1, closely adhering to legume, dotted. Keel and Wings nearly as long as standard. Flowers minute, in a dense spike. Stip. lineari-setaceous. Lower Lts. obovate; upper oblong. **a.** 6, 7. *Cult.* s. Eur. ✓

10. **gracilis.** DC Leg. globose, very obtuse, hairless. Seeds 1 or 2, subglobose, compressed, dotted. Wings equal to keel and standard. Teeth of Cal. nearly equal, hardly shorter than tube. Stip. somewhat setaceous. Lts. obovate, narrow. **a.** 5, 6. *Stony.* mdt. Fr. It. Istr. ✓

11. **elegans.** Salzm Leg. ovoid, plicato-rugose, somewhat lacunose. Seed 1, adhering to legume, subglobose, hardly retuse, finely dotted. Teeth of Cal. nearly as long as tube. **b.** ? Cors. *Seems from description very near to* M. parviflora.

12. **italica.** Lam Leg. globose, vermiculato-rugose, somewhat corky. Seeds 1 or 2, subglobose, compressed, dotted. Wings and Keel equal, shorter than standard. Teeth of Cal. unequal. Stip. lanceolate, acute, somewhat laciniate at base. Lts. obovato-subrotund. **a.** 4, 5. Rome. Ostia. Cors. Sic. ✓

C. *Legume arcuato-rugose.*

13. **sulcata.** Desf Leg. ovoideo-subglobose. Seeds 1 or 2, suborbicular, finely dotted. Fl. not crowded. Stip. lineari-subulate, laciniato-dentate. Lts. obovate; uppermost nearly linear. **a.** 3–5. *Uncult.* Mtp. Bord. It. ✓

14. **compacta.** Salzm Leg. obovoid, tiled downwards. Seed 1, finely dotted. Teeth of Cal. nearly equal. Fl. crowded. Stip. subulate, laciniato-dentate. Lts. obovato-cuneate, some- v of 13 Gr

what truncate. **a.** 4, 5. *Moist meadows.* Sic.—Guss.

15. **infesta.** Guss Leg. subglobose, 1–2-seeded, shorter than its stalk. Teeth of Cal. unequal. Wings half as long as standard and keel! Fl. imbricate. Stip. subulate, laciniato-dentate. Lts. obovate and oblongo-cuneate. **a.** 4, 5. *Fields.* Sic.

16. **messanensis.** Desf Leg. unequally lanceolate, acute at each end. Seed 1, subovoid, compressed, *large, black,* dotted. Teeth of Cal. nearly equal. Rac. few-flowered. Stip. broad and dentate at base, linear above. Lts. obovato-cuneate. **a.** 4, 5. *Meadows.* w. Sic. Luc. Toulon. ✓

175. TRIFOLIUM.

A. Calyx sessile, without bracts. Mouth with a hairy or callous ring.

i. Calyx with 20 nerves.

a. Teeth nearly equal. Sp. 1–6.

b. Lower Tooth twice as long as others. Sp. 7–9.

ii. Calyx with 10 nerves.

a. Heads terminal, on a leafy stem or branch. Sp. 10–14.

b. Heads terminal, on a nearly naked branch. This division it is not easy to characterize. The heads are partly terminal, and in that case there is a pair of L. not distant from them; and partly on lateral branches, which are naked except in having such a pair of L. Where these L. are close to the head, the latter is usually said to be sessile; where more distant, it is described as stalked. It is the presence of these L. on the axillary flower-stalks which distinguishes this section from the next. In *T. stellatum,* however, there is only a single L. near the head, and even this is sometimes wanting; and in *T. striatum* it seems that the flower-stalk is sometimes naked.

* Teeth reticulato-venose. Sp. 15.

** Teeth unequal, 3-nerved. Sp. 16–20.

*** Teeth very unequal, only the largest 3-nerved. Sp. 21–24.

**** Teeth 1-nerved, on a somewhat triangular base.

† Fl. large. Teeth setaceous. Sp. 25–29.

†† Fl. small. Teeth subulate. Sp. 30–33.

c. Heads terminal and axillary, on naked stalks.

* Heads from a pair of L. Sp. 34–37.

** Heads from a single L. Sp. 38–40.

d. Axillary Heads sessile. Sp. 41–43.

B. Calyx sessile, without bracts, not inflated; the mouth open. Sp. 44.

C. Calyx inflated after flowering!

i. Calyx hairy, 2-lipped; the upper alone inflated.

a. Calyces bent down after flowering, forming an even, globose head. Sp. 45–47.

b. Calyces spreading after flowering, forming a stellate head. Sp. 48, 49.

ii. Calyx hairless. Teeth nearly equal. Tube inflated. Sp. 50–52.

D. Calyx not inflated. Striæ numerous. Stalks furnished with bracteoles. Sp. 53.

E. Calyx 10-ribbed (as in all the following). Bracteoles nearly sessile. Sp. 54–56.

F. Fl. in heads. Calyx on a slender bracteolate stalk. Teeth equal, or two upper longest.

i. Stalks shorter than tube of calyx. Sp. 57–60.

ii. Inner Stalks about equal to tube of calyx. Sp. 61–63.

iii. Inner Stalks much longer than tube of calyx. Sp. 64–69.

G. Fl. solitary, or in a lax umbel. Calyx on bracteolate stalks. Fl. large, coriaceous, persistent; purple or white. Sp. 70–73.

H. Fl. yellow, scored, deflexed. Upper Teeth shorter.

i. L. pinnato-ternate. Sp. 74–77.

ii. All L. ternate. Sp. 78–83.

A. *Calyx sessile, not inflated after flowering, without bracts. Mouth with a callous or hairy ring.*

i. *Calyx 20-nerved.*

a. *Teeth nearly equal.*

1. **congestum.** Plant very compact. Teeth of Cal. rigid, subulate, equalling corolla. Tube very villous. Heads subglobose, crowded, bracteate. Stip. acuminate, scariose. Lts. obcordato-cuneiform. **a.** 4, 5. *Clay uncult.* Sic.

2. **lappaceum.** L Diffuse. Teeth of Cal.

subulato-filiform, equalling corolla. Tube hairless. Lts. obovate, denticulate. All Stip. acuminate; the upper not close to the head of flowers. **a.** 5, 6. *Dry.* s. Eur.

3. **Cherleri.** L Diffuse. Teeth of Cal. weak, filiform, exceeding corolla, twice as long as villous tube. Bracteate Stip. rounded, with radiating nerves, generally without tails, close to the head. **a.** 5, 6. *Sandy.* s. Eur.

4. **hirtum.** All Villous, diffuse. Teeth of Cal. filiform, nearly equalling monopetalous corolla, three times as long as tube. Stip. with subulate tails; the upper close to the globose head. Lts. obovate. Seed 1, regularly ovate. *Fl. purple.* **a.** 5, 6. *rare.* Mtp. Rous. It.

5. **villosum.** "Stem with adpressed hairs. Heads globose, bracteate, solitary, terminal. Teeth of Cal. setaceous, half as long as corolla, very villous. Stip. ovate, awned. Lts. obovate, denticulate. *Fl. straw-coloured.* **a.** 5. *Sandy fields.* Fiume Grande near Termini."—GUSS. *from* PRESL.

6. **diffusum.** Ehrh Villous. Teeth of Cal. shorter than monopetalous corolla. Stip. narrow, with lineari-lanceolate tail. Lts. ovato-lanceolate, obtuse. Head ovate. Leg. circumsciss. Seeds 2, irregularly obcordate. **a.** 7. *Sandy.* Near Paris.—DC.

b. *Lowermost Tooth of Calyx at least twice as long as others.*

7. **arachnoideum.** Hairy. Lower Tooth only twice as long as others, equalling corolla. Stip. acuminate. Lts. obcordate, quite entire. **a.** 5. *Sandy.* Fiume Grande near Termini.

8. **alpestre.** L Lower Tooth three or four times as long as others, shorter than monopetalous corolla; the four shorter hardly as long as tube. Heads subglobose, often in pairs. Stip. scariose, narrow, with a long, linear tail. **p.** 7. *Hills.* G.

9. **rubens.** L (Cal. without glands, DC.) Lower Tooth three or four times as long as others, hardly equalling monopetalous corolla; the four shorter not half as long as tube. Spike oblong. Stip. large, leafy. Tail lanceolate. Lts. obtuse, deeply denticulate. **p.** 6. *Shady hills.* s. and m. Eur. *Not in Sicily.*

ii. *Calyx* 10-*nerved.*

a. *Heads terminal, on a leafy stem or branch.*

10. **purpureum.** Lois Lower Tooth of Cal. much longer than others, but falling far short of corolla. Stip. narrow. Tail setiform. Lts. lineari-lanceolate, acute. Upper L. separate from head. **a.** 6, 7. *Dry.* Port Juvenal near Mtp. Scandicci Alto near Florence.

11. **angustifolium.** L Teeth of Cal. nearly equal, longer than tube, pungent, nearly equalling corolla. Stip. very long and narrow. Lts. lineari-lanceolate, very acute. *Fl. purple.* **a.** 5, 6. *Dry hills.* s. Eur. ✓

12. **intermedium.** Lojcy. Teeth of Cal. nearly equal, longer than tube, nearly equalling corolla, not pungent. Stip. with short tails. Lts. lanceolate. *Fl. white.* **a.** 4–6. *Sandy fields.* s. Sic. *In appearance between* T. angustifolium *and* T. arvense.

13. **incarnatum.** ~~L~~ Lapey. Teeth of Cal. nearly equal, filiformi-subulate, longer than tube, falling short of corolla. Stip. broad and short, somewhat sphacelate at tip. Lts. obcordato-subrotund. *Fl. scarlet.* **a.** 5, 6. *Meadows.* s. Eur. ✓

hybridum Duby+G

pallescens Bentha

β. Molinieri. Fl. pale. Throat without hairs. Stip. narrow, ovate, acute.

14. **Lagopus.** ~~L~~ Pourr Very hirsute. Cal. cylindrical. Teeth setaceous, equal to, not longer than tube, shorter than corolla. Stip. ovate, prolonged. Lts. obovato-cuneate, denticulate. **a.** Sila in Calabria. *There is sometimes a secondary head.* ✓

b. *Heads terminal, on a nearly naked branch.* [See observations in the tabular view of the genus.]

* *Teeth reticulato-venose, somewhat* 3-*nerved.*

15. **stellatum.** L Teeth of Cal. equal, subulate, equalling corolla. Upper L. single, distant from head. Stip. broad, obovate, serrulate. Lts. obcordate. **a.** 6, 7. *Barren.* s. Eur. *In one place in England.* ✓

** *All Teeth of Calyx* 3-*nerved; lowermost somewhat longer.*

16. **maritimum.** Huds Teeth of Cal. rigid, triangular; lowermost somewhat deflexed, shorter than tube. Tube conical, with a callous swelling below the teeth. Stip. lineari-subulate. Lts. obovate. **a.** 5, 6. *Meadows and banks.* ✓

17. **Xatardii.** DC Teeth of Cal. rigid, subulate, as long as tube in the flower, shorter in the fruit. Heads ovate. Stip. small. Tail lineari-subulate. Lts. obovato-oblong. **a.** e. Pyr. *Probably a var. of* T. maritimum. G+G.

18. **clypeatum.** L "Teeth of Cal. ovato-lanceolate, acute, at last spreading; lowermost very large. (Cor. very large, Linn. Herbarium.) Stem ascending. Stip. ovate. Lts. obovate, obtuse. **a.** 6. *Fl. purple.* Mont Louis and St. Beat in the Pyr. Bonifacio in Cors."—Lois.

panormitanum Presl

19. **squarrosum.** DC Teeth of Cal. triangular; shorter equalling tube; lowermost twice as long, at last recurved. Heads ovate. Stip. somewhat membranous, with long acumen. Lts. lanceolate or oval. *Fl. white.* **a.** 5, 6. *Cult.* It.

20. **alexandrinum.** L Cal. of Fr. ovato-campanulate, membranous. Teeth somewhat falcate, soft; (two upper united, DC.;) lowermost inflexed. Lts. oblong or lanceolate. Standard twice keel. **a.** 6, 7. *Clay.* Between Pantaleone and Zaule near Trieste. *The Specimen in Linnæus's Herbarium has axillary naked heads from a pair of L., and is nearer to* supinum *than to* maritimum.

*** *Lowermost teeth 3-nerved, others 1-nerved, half as long. Fl. white or yellowish.*

21. **longestipulatum.** Loisl "Lower teeth equalling monopetalous corolla. Heads ovate, not far from upper pair of L. Stip. narrow. Tails lineari-subulate. Lts. oblongo-elliptic. **a.** 5. *Fields and pastures.* Bonifacio."—Lois.
[illegible]

22. **pannonicum.** L Very hairy. Cal. glandular. Teeth setaceous, equalling tube; lowermost falling short of corolla. Heads oblongo-oval, distant from pair of L. Stip. with a very long, linear tail. Lts. oblongo-lanceolate, ciliate, nearly entire. **p.** 7, 8. *Meadows.* Pdm. Carniola.

β. *barbatum.* Cal. densely silky. Lts. lanceolate. Mtp.

23. **cinctum.** D.C. Lowermost Teeth of Cal. very large, but falling far short of corolla. Heads ovate, stalked. Stip. broad, nervose; the upper somewhat palmate. Lts. oblong, villous. **a.** Mtp.

24. **ochroleucum.** L Lowermost Teeth of Cal. equalling tube, about half as long as corolla. Heads oval, nearly sessile. Stip. narrow, nervose. Tail lanceolato-subulate. Lts. oblong. **p.** 7. *Dry meadows.*

**** *Teeth 1-nerved, on a triangular base, which often has 3 nerves.*

† *Flower large, three or four times tube of calyx. Teeth setaceous.*

25. **medium.** L Lowermost Tooth of Cal. twice as long as upper, falling short of monopetalous corolla. Side teeth intermediate. Head lax, stalked. Stip. tapering into subulate tail. Lts. oblong. **p.** 6, 7. *Shade.*

26. **pratense.** L 4 Cal. Teeth equal; lowermost twice as long, shorter than monopetalous corolla. Heads full, subglobose, nearly sessile. Stip. broad, with abrupt, setaceous tail. Lts. elliptico-oblong, nearly entire. **p.** 6, 7. *Woods and pastures.*

β. *microphyllum.* L. smaller, denticulate.

27. **noricum.** Wulf Teeth of Cal. lineari-setaceous, not very unequal; lowermost half as long as corolla. Heads globose, sessile, nodding. Stip. ovate, with triangular acumen. Lts. oblongo-lanceolate, quite entire. **p.** 7. *High.* Alps. of Tyr. and Carniola.

28. **pallidum.** Waldst. & K. callous ring in throat All Cal. Teeth nearly equal, longer than tube, and shorter than monopetalous corolla. Heads subglobose, sessile, erect. Stip. broad, with setaceous tail. Lts. elliptico-subrotund, denticulate. Hairs spreading. (Seeds 2? Guss.) **a. b.** 5, 6. *Meadows.* It. Trieste.

29. **flavescens.** Tin. "Cal. Teeth nearly equal, shorter than monopetalous corolla. Heads globose, sessile, erect. Stip. broad, with setaceous tail. Lts. obovate; of upper L. denticulate. **a. b.** 5, 6. *Open woods.* Sic."—Guss. *Habit of* T. pratense, *but Fl. always yellowish, and Cal. Teeth nearly equal.*

†† *Flower small, hardly twice as long as tube of calyx. Teeth subulate, nearly equal.*

thymifolium Vill. 1779

30. **saxatile.** Cal. villous. Teeth erect, as long as corolla. Heads lax, subglobose, sessile. Stip. ovate. Acumen triangular. Lts. very small, cuneate, retuse. (**a.** or **b.** DC. **p.** Koch.) 7, 8. *Very high stony.* Vall. Simp. Dau.

31. **Bocconii.** Savi Teeth of Cal. shorter than tube, equalling corolla; porrect in the fruit. Heads generally in pairs. Stip. with lanceolato-subulate tail. Lts. broad, obovate, denticulate at top. **a.** 7. *Dry.* s. Eur. Cornwall.

32. **striatum.** L Teeth of Cal. half as long as tube, spreading in the fruit. Heads ovoid, compact, on short branches, and apparently axillary. Stip. broad, with short acumen. Lts. broad, obovate, denticulate at top. **a.** 6. *Dry.*

The above is the usual form. I have it:—

1. Heads ovate, single, from 1 or 2 L.
2. Heads cylindrical, each from its L.
3. Heads in pairs, each with its L.

4. Some of the heads on axillary naked stalks.

In the Specimen in Linnæus's Herbarium, marked 28, the lowermost tooth is rather longer than the tube.

33. **tenuiflorum.** Ten Villous. Lowermost Tooth of Cal. longest, as long as tube and equalling corolla; all spinescent. Heads oblong, sessile on short branches, and apparently axillary. Lower Stip. lanceolate; upper ovate, mucronate. Lts. obovato-cuneate, serrulate. Stem erect. **a.** 4–6. *Open woods.* Nap. Sic.

c. *Some Heads terminal, others axillary, on naked stalks.*

* *Axillary Heads from a pair of L.*

34. **obscurum.** Villous. Cal. Teeth nearly equal, lanceolate, acuminate, longer than tube. (3-nerved. Callus nearly hairless, Guss.) Stip. membranous, ciliate. Tail triangular. Lts. obovate or lanceolate, entire. **a.** Florence. *very rare.*

2 lateral callos. in calyx

35. **leucanthum.** M. "Villous. Cal. Teeth nearly equal, lineari-lanceolate, longer than tube, shorter than corolla, nearly 1-nerved. Mouth closed with dense hairs. Heads often in pairs, stalked naked or leafy. Stip. with lanceolate tails. Lts. obovate or oblong. Seed 1. **a.** 4, 5. *Meadows and dry pastures.* Sic."—Guss.

36. **supinum.** Savi Cal. Teeth unequal, 2, 2, and 1; upper shorter than tube. Stip. small, subulate. L. obovate, ciliate. **a.** 6, 7. *Clayey banks.* mdt. Fr. It.

37. **latinum.** Cal. Teeth unequal, 4 and 1; all longer than tube. Stip. linear, acute. L. lanceolate. **a.** 6. *Woods.* Macchia de Mattei near Rome.

** *Axillary Heads from a single L.*

38. **arvense.** L. Tube of Cal. ovoid. Teeth equal, setaceous, exceeding polypetalous corolla. Heads at last cylindrical, on long stalks. Stip. hairy, membranous, nervose, with very long, subulate tail. Lts. lineari-spatulate. **a.** 7–9. *Fields and sandy.*

39. **phleoides.** Tube of Cal. cylindrical, not closed. Teeth equal, subulate, diverging, longer than tube, shorter than corolla. Heads subglobose. Stip. somewhat membranous, with short subulate tail. Lts. obovato-denticulate. **a.** 5, 6. *Open hills.* It. Sic.

✓ 40. **ligusticum.** Balb Tube of Cal. conical. Teeth equal, subulate, longer than tube, shorter than corolla. Heads oblong, often in pairs. Stip. small, with subulate tail. Lts. obovate. **a.** 6, 7. It.

d. *Axillary Heads sessile.*

41. **dalmaticum.** Vis. "Cal. Teeth hirsute, triangular, about equalling corolla. Heads simple, cylindrical, mostly terminal. Plant erect. Stip. with short, lanceolate tails. Lts. obovate. **a.** 4, 5. *Open hills.* Monti della Piana e delle Rose, Sic."—Guss.

42. **scabrum.** L. Cal. Teeth unequal, rigid, and recurved in fruit, equalling corolla. Heads simple, ovate, almost all axillary. Plant prostrate. Stip. with short tails. Lts. obovato-denticulate. **a.** 5, 6. *Dry hills.* ✓

43. **suffocatum.** L. Cal. nearly smooth, membranous. Teeth nearly equal, lanceolate, recurved, far exceeding corolla. Heads compound. L. springing from among the flowers. Plant compact. Stip. scariose. Lts. obcordate, denticulate. **a.** 4–6. *Sandy shores.* Eng. mdt. Fr. Istr. It. ✓

B. *Calyx sessile, without bracts; not inflated. Mouth open.*

44. **subterraneum.** L. Cal. finely striate, thickened on back after flowering. Teeth much shorter than corolla. Heads with a crown of abortive flowers. **a.** 5. *Sandy pastures.* Eng. w. and s. Fr. It. *Not in Germany, except on the Adriatic.* ✓

C. *Calyx inflated after flowering! sessile, or nearly so.*

i. *Calyx hairy, 2-lipped; the upper alone inflated.*

a. *Calyces bent down after flowering. Heads evenly globose.*

45. **Cupani.** Lower Lip of Cal. as long as upper, even when in fruit. Plant decumbent, (not creeping,) hairless. Heads globose, stalked. **p.** 5, 6. *Open pastures.* Sic.

46. **fragiferum.** L. Lower Lip of Cal. of Fr. much shorter than the upper. Heads evenly globose on long stalks. Plant creeping. **p.** 5–8. *Clay meadows.* ✓

β. *Bonanni.* The two longer teeth connivent. Sic.

47. **tomentosum.** L. Upper Lip of Cal. of Fr. not much longer than lower. Stalk of Heads shorter than that of L. Stip. with short, lanceolate tail. Lts. sharply serrulate. **a.** 5. *Dry.* s. Eur. ✓

b. *Calyces spreading after flowering, and giving a star-like appearance to the head of fruit.*

Clusii Gr. Gr.

48. **abbreviatum,** J. W. Upper Lip. of Cal. about three times as long as lower when in fruit. Head-stalk shorter than L., somewhat recurved in fruit. Stip. lineari-lanceolate, acute. Lts. acutely serrulate. **a.** 4–6. s. Eur.

49. **resupinatum.** L Upper Lip of Cal. about four times as long as lower in the fruit. Head-stalk exceeding L., straight. Stip. lineari-lanceolate, acute. Lts. acutely serrulate. **a.** 4–6. *Meadows and uncult.* s. Eur. *This is* suaveolens *of Guss., as the preceding is the* resupinatum *of* D.C. ✓

β Clusii

ii. *Calyx hairless. Teeth nearly equal. Tube inflated.*

50. **spumosum.** L Cal. of Fr. scariose, nerved, and veined. Teeth not half as long as tube. Seeds 4. Heads ovate, nearly sessile. Stem branched, spreading. Stip. broad, united only at base, very acute. Lts. obovate, nearly entire. **a.** 4, 5. *Open hills.* Tusc. Sic.

51. **multistriatum.** Koch Cal. of Fr. with about 25 nerves, and hardly any connecting veins. Teeth setaceous, as long as tube. Bracts ovate, equalling tube of calyx. Tails of Stip. lanceolato-subulate. Lts. obovate or oblong, sharply serrate. **a.** 8. *Shore.* Trieste.

52. **vesiculosum.** Savi Cal. of Fr. with connecting veins between the nerves. Teeth as long as tube. Seeds 2. Heads ovate, on a long stalk. *Fl. purple.* Stem firm, erect. Stip. connate, somewhat membranous, with long tail. Lts. lanceolate, acutely serrate. **a.** 4, 5. *Dry thickets.* Sylva Sacra. Sic.

D. *Calyx not inflated. Striæ numerous. Stalks bracteolate.*

53. **mutabile.** "Erect. Cal. hairless. Teeth setaceous, equal, at last recurved, falling short of corolla. Tails of Stip. setaceous. Lts. elliptico-lanceolate; of lowest L. obovate, aristato-serrate. **a.** 5, 6. *Sandy thickets.* Sic. *Habit of* T. vesiculosum."—Guss.

E. *Calyx* 10-*ribbed, bracteolate, sessile, or on a short thick stalk.*

54. **isthmocarpon.** Hairless. Stem ascending. Cal. Teeth nearly equal, somewhat recurved, falling short of corolla. Leg. 2–3-seeded, contracted in the middle. Heads stalked. Stip. scariose. Lts. obovate, serrulate. **a.** 4, 5. *Open, grassy.* Between Alcamo and Calatafiumi, Sic. *Like* T. nigrescens. ✓

55. **strictum.** L Cal. hairless. Tube conical. Teeth nearly equal, longer than tube. Heads axillary, stalked. Leg. 2-seeded, not contracted. Stip. somewhat scariose. Lts. oblongo-elliptic, serrulate. **a.** 5. *Grass.* m. and s. Eur. *occ.* ✓

56. **glomeratum.** L Cal. hairless. Teeth ovate, acuminate, spreading, shorter than polypetalous corolla. Heads globose, sessile. Stip. scariose, with long acumen. Lts. obovate, acutely dentate. **a.** 5, 6. *Dry, uncult.* Eng. s. Fr. Istria. It. ✓

F. *Flowers in heads. Calyx on a slender, bracteolate stalk. Teeth equal, or the two upper longest. Mouth open.*

i. *Stalks shorter than tube of calyx.*

Perreymondi Gr. M: Ehrh. but Perrey.

57. **parviflorum.** Diffuse. Cal. bursting by the ripening legume! Upper Teeth of Cal. exceeding corolla. Heads axillary, stalked and sessile. Stip. scariose. Lts. obovate, acutely serrate. **a.** 6. *Open hills.* Halle. Prague.

uss

58. **montanum.** Erect. Cal. deflexed after flowering. Teeth as long as tube. Heads axillary and terminal, globose, afterwards oblong. Stip. lanceolate, acute. Lts. elliptico-oblong, obtuse, denticulate. Seed 1. **p.** 5–7. *Hill meadows. Not British.* ✓

59. **rupestre.** Diffuse. Cal. deflexed after flowering. Teeth of Cal. longer than tube. Heads hemispherical, all terminal. L. nearly all radical. Lts. oval, denticulate. Mont Lachen in Pyr.—Ser. Monte Cornu in the Abruzzi.—Ten. *Query if the same.*

Thalii Vill Reyn

60. **cæspitosum.** Tufted. Cal. not deflexed. Teeth equal to tube, and reaching to two-thirds of corolla and to legume. Stip. scariose. Lts. obovate, denticulate. **p.** 7, 8. *Mountain pastures.* Alps. ✓

ii. *Inner stalks about as long as tube of calyx.*

61. **Bivonæ.** "Hairless. Stalk, tube, and teeth of Cal. all equal, and half as long as corolla; two upper broader. Stems numerous, diffuse. Stip. sheathing, scariose. Lts. oblongo-cuneate. Seeds 1, 2. *Grassy hills. Fl. pink.* Sic."—Guss.

62. **pallescens.** Schreb Cal. Teeth ovato-lanceolate, about one-third of corolla; two upper longer. Stem tufted, decumbent. Tail of Stip. ovato-lanceolate, very acute. Lts. obovate, serrulate. *Fl. white or yellowish.* **p.** 7–9. *High pastures.* e. Alps. Mt. Ventous.

63. **minutum.** Cal. Teeth lanceolato-su-

bulate; the upper longer and recurved. Cor. persistent. Standard with a long claw, emarginate, bent down after the flowering, dilated at the end. Style hooked, continued from the nearly straight lower margin of the legume. Stems numerous, diffuse. Tail of Stip. lineari-subulate, herbaceous. **a.** s. and s. w. Fr.—*Extracted from Cosson, who gives no character.*

iii. *Inner stalks much longer than tube of calyx.*

✓ 64. **repens.** L. Cal. Teeth lanceolate, decidedly shorter than tube, about half as long as corolla. Stem solid, creeping. Stip. scariose, with abrupt acumen. Lts. obovate, serrulate. **p.** 5–9. *Meadows, &c.*

✓ 65. **nigrescens.** Viv. Cal. Teeth triangular, decidedly shorter than tube, about half as long as corolla. Stem solid, ascending. Stip. broad. Lts. oblong, acutely denticulate. Leg. somewhat exsert, (crenate on lower margin, Koch.) Seeds 4. **a.** 3–5. *Meadows and fields.* s. Eur.

✓ 66. **hybridum** L. Cal. Teeth subulate, about equal to tube, half as long as corolla. Stem hollow, ascending. Stip. ovate, with sharp acumen. Lts. rhombeo-elliptic, obtuse, serrulate, with 20 or 30 veins at margin on each side. **p.** 5–8. *Moist meadows.* Ger.

67. **elegans.** Sav. Cal. Teeth setaceous, somewhat longer than tube, shorter than corolla. Stem solid, ascending. Stip. leafy, with long, narrow acumen. Lts. obovate, denticulate, with 40–60 veins at margin on each side. Seeds 2. **p.** 6, 7. *Hills.* s. Eur.—Koch.

68. **angulatum.** Waldst. Cal. Teeth setaceous, twice as long as tube, nearly equalling scored corolla. Stem angular, solid, decumbent. Stip. scariose. Lts. obovate, acutely serrate. Leg. exsert. Seeds 4, *yellowish.* **a.** 4, 5. *Grassy hills.* Mtp. Monti San Giuliano and Calatafimi in Sic.?

✓ 69. **michelianum.** Savi. Cal. Teeth setaceous, three or four times as long as tube, about half as long as corolla. Stem hollow, ascending. Stip. leafy, lanceolate, acute. Lts. obovate, serrulate. Leg. exsert. Seeds 2. **a.** 5. *Moist meadows.* Nantes. Pisa. larger than 68.

G. *Flowers not in heads. Calyces on bracteolate stalks. Flower large, coriaceous, persistent, purple or white.*

70. **savianum.** Guss. Fl. 1 or 2. Stalks shorter than calyx, recurved and thick when in fruit. Cal. Teeth acute, recurved. Stip. scariose, white. Lts. elliptic, nerveless, with long acumen. Seeds 5–7. **p.** 5, 6. *Dry, open.* Mandanici Baña, Sic.

71. **uniflorum.** D.C. Fl. 1 or 2. Stalks longer than tube of calyx, slender. Cal. cylindrical. Teeth short, subulate, equal. Stip. sheathing, with long acumen. Lts. ovate, acuminate. Seeds 2. **p.** 5, 6. *Dry, open.* Mars. ω 70 fr. G. ✓

72. **alpinum.** L. Fl. in umbels, with an inferior whorl. Cal. campanulate. Teeth equal, setaceous, very long, falling short of corolla. Stip. linear, acute. L. on long stalks. Lts. 3, lineari-lanceolate, denticulate. Seeds 2. **p.** 6–8. *High.* w. and m. Alps. ✓

73. **Lupinaster.** Fl. in umbels. Cal. campanulate. Teeth longer than tube, shorter than corolla. Stip. membranous, broad, acuminate. L. sessile. Lts. 3–5, lineari-lanceolate, mucronate, acutely denticulate. **p.** *Dry hills.* Sic.?

H. *Flower yellow (except in* T. speciosum), *more or less scored, deflexed after flowering (except in* T. filiforme). *Two upper teeth of Calyx shorter.*

i. *L. pinnato-ternate. Upper teeth of Calyx very short.*

74. **speciosum.** Fl. purple, on short stalks. Standard broadly obovate, finely serrulate. Stip. ciliate. **a** 5, 6. *Mountain pastures.* Sic. ✓

75. **procumbens.** L. Standard strongly pinched in at base, concave above. Heads ovoid, many-flowered. Common L.-stalk rarely exceeding L. Leg. four times as long as style, about half as long as standard. Stip. ovate. **a.** 6, 7. *Grassy.* ✓

76. **minus.** Sm. Standard hardly scored, folded. Heads hemispherical, about 10-flowered, on stalks which exceed L. Stip. ovate. Leg. four times style. **a.** 6, 7. *Gravel.* ✓

77. **patens.** Schreb. Lower L. strictly ternate; upper pinnato-ternate. Standard scored, pinched in at base, concave above. Heads on filiform stalks which far exceed L. Stip. somewhat cordate. Style as long as legume. Seed 1. **a.** 6–8. *Meadows.* Fr. s. G. It. ✓

ii. ~~*All*~~ *L. simply ternate.*

78. **filiforme** L. Standard hardly scored, folded; not deflexed. Upper Teeth of Cal. shorter than tube. Heads lax, 2–7-flowered, on slender stalks. Leg. nearly equalling standard, four times style. Stip. oblong. **a.** 6, 7. *Sand or gravel.* Eng. Fr. It. Trieste. *This seems to be the* filiforme *of the Linn. Herb.* ✓

79. **Sebastiani.** Standard hardly scored, concave. Upper Teeth of Cal. twice as long as tube. Head lax, 10–20-flowered. Fl. on short stalks. Stip. narrow. Seed 1. **a.** 5, 6. *Woody hills.* Rome.

80. **agrarium.** L. Standard evidently scored, pinched in at base, concave above. Upper Teeth of Cal. shorter than tube. Stalks at last deflexed. Heads subrotund. Style as long as legume. (Seeds *bay*, irregularly cordate, TEN.) Stip. oblongo-lanceolate. **p.** 6, 7. *Hills.* s. and m. Eur.

81. **bruttium.** "Pubescent. Standard broad, furrowed. Upper Teeth of Cal. very short; lower setiferous. Heads globose, depressed, on stalks which exceed L. Seeds *yellow*, elliptic. Stip. leafy. **a.** ? *Dry pastures.* Mte. Cucuzzo in Calab. *Differs from* T. agrarium, *in its larger Fl., yellow elliptic Seeds, and in all the Lts. being stalked.*"—TEN.

82. **badium.** Schreb. Standard furrowed, arched from base. Cal. hairless. The lower fruit-stalks deflexed. Head subrotundo-ovate in fruit. Style half as long as legume. Upper Stip. nearly ovate. **a.** 7, 8. *Moist meadows and pastures.* Alps.

83. **spadiceum.** L. Standard furrowed, arched from base. Fr.-stalks deflexed. Heads in fruit cylindrical. All Stip. oblongo-lanceolate. **a.** 7, 8. *Boggy meadows.* Fr. G. Sw.

The following I do not know where to place:—

84. **tenuifolium.** Erect. Lower L. obcordato-cuneate, upper linear, mucronate, dentate at top. Teeth of Cal. unequal, shorter than monopetalous corolla. Heads oblong, sessile, solitary or in pairs. **a.** *Sandy fields.* s. e. Nap.—TEN.

85. **incanum.** Heads ovato-oblong, villous, bracteate; terminal usually solitary. Cal. ovate, striate, hoary, villous. Teeth setaceous, erect, equal, exceeding corolla. Lts. obcordate, denticulate at top. Stems diffuse. **a.** 6. *Sandy fields.* Fiume Grande, below Polizzi. Sic."—GUSS. *from* PRESL.

86. **glabellum.** Diffuse. Cal. angular, smooth. Teeth subulate, 1-nerved, ciliate, equal, rigid, spreading, shorter than corolla. Head ovato-globose, stalked. Lts. cuneato-obovate, obtuse, somewhat denticulate. Stip. long, linear. Seeds ovate, acute, with a tubercle on each side. Sic.—GUSS. *from* PRESL.

87. **nervosum.** Erect. Somewhat branched. Teeth of Cal. equal, lanceolato-subulate, 1-nerved, ciliate, rigid, equalling corolla. Heads sessile, subglobose. Lts. obcordate, pubescent, entire. Stip. lanceolate, acuminate, nerved. Sic.—GUSS. *from* PRESL.

88. **panormitanum.** Erect. Teeth of Cal. setaceous, hirsute; one twice as long as the others, and equalling corolla. Heads stalked, subglobose. Lts. oblong, retuse, very entire. Stip. lanceolate, ending in a long awn. Sic. *Possibly a variety of* T. squarrosum. —GUSS. *from* PRESL.

89. **flavum.** Diffuse, hirsute. Cal. villous. Teeth subulate, equal, longer than the short tube. Heads subglobose, on a long filiform stalk. Lts. obcordato-ovate, denticulate; the terminal stalked. Stip. ovate, ciliate. *Belongs to the first division of Section* **H.** Sic.—GUSS. *from* PRESL.

176. DORYCNIUM. Tourn

i. *Teeth of Calyx longer than tube.*

1. **rectum.** DC Erect, villous. Leg. 20–30, slender, three times as long as calyx. Stalk longer than calyx. L. stalked. Lts. obovate. Stip. cordato-ovate. **p.** 6, 7. *Moist shade.* s. Eur.

2. **hirsutum.** DC Erect, hoary, villous. Leg. 8–15, turgid, hardly exceeding calyx. Wings of Cor. with a longitudinal impression. Stalk shorter than tube of calyx. L. nearly sessile. Lts. obovate. Stip. ovato-lanceolate. **p.** 5, 6. *Dry hills.* s. Eur.

β. incanum. Silky. Cal. nearly sessile. L. stalked. **p.** 5. *Sandy shores.* Frejus. Isl. of Hyères. Nice.

3. **parviflorum.** "Softly villous, ascending or erect. Leg. 4–6, oblong, hardly exceeding calyx. Stalk exceeding L. Teeth of Cal. longer than tube, about equalling corolla. Lts. oblongo-obovate; the lateral ones oblique. Stip. ovato-oblong. *Much like* Lotus hispidus."—GUSS. **a.** 4, 5. *Sandy coasts.* Isl. of Hyères. Cors. Sic.

ii. *Teeth of Calyx shorter than tube.*

4. **herbaceum.** Vill Herbaceous? Leg. ovate, many-seeded, two or three times as long as calyx. Teeth of Cal. obtuse. (Standard not contracted in the middle.—JORDAN.) (Wings marked with a transverse hollow.—KOCH.) Lts. and Stip. obovate, obtuse, with spreading hairs. **p.** 7. Chambéry. Grenoble. Lugano.

β gracile

5. **suffruticosum.** Vill Somewhat shrubby. Leg. globose, 1-seeded, twice as large as calyx. Teeth of Cal. triangular. (Standard contracted in the middle.—JORDAN.) Lts. and Stip. lineari-lanceolate, acute, silky. **w.** 6. *Barren hills.* s. Eur. *not in Sic. Koch takes no notice of the different number of seeds in these two species; and Jordan says of all the species that the Leg. is usually* 1*-seeded.*

β. *decumbens*, JORDAN. Wing not half as broad as standard. Stem slender at base, and not woody. cf. Gr. G.

177. LOTUS.

i. *Legume turgid, curved. Flowers* 1 *or* 2.

1. **edulis.** Diffuse. Leg. hairless. Seeds punctato-rugose. Teeth of Cal. lanceolate, three times as long as tube. Bracts ovate, equalling calyx. **a.** 4, 5. *Dry hills* on coast of Mdt.

ii. *Legume long, compressed. Flowers in umbels.*

2. **ornithopodioides.** Diffuse. Leg. 3–5, somewhat jointed, curved, deflexed. Cal. 2-lipped; lower of 3 unequal teeth. Lts. nearly equal, on short equal stalks. Stip. ovate. **a.** 4, 5. *Barren hills.* s. Eur.

3. **peregrinus.** Diffuse. Leg. 2–3-seeded, jointed, straight, horizontal. Lateral Lts. small and sessile; terminal stalked. **a.** s. Eur.—DC.

iii. *Leg. long, nearly cylindrical when ripe. Style toothless.*

a. *Lateral Teeth of Calyx shorter.*

4. **cytisoides.** Leg. somewhat torulose, compressed when young. Cal. hoary. Teeth hardly as long as tube. (Stip. oblong, as long as the not dilated leaf-stalk.—GUSS., *under* prostratus.) **w.** 5, 6. *Coasts* of Mdt. *Most authors consider this species as somewhat shrubby.* DC. *alone marks it as annual.* L. cytisoides *of Guss. is marked by ovate stipules.*

5. **creticus.** Silky, diffuse. Leg. about 4-seeded, torulose, straight, nodding. Teeth of Cal. as long as tube. Bracts terminal, shorter than calyx. L.-stalk very short, dilated. **w.** 4, 5. *Sandy shores.* Sic.

6. **pusillus.** "Diffuse, hoary with adpressed hairs. Leg. slender, terete, curved at the end, at last somewhat torulose. Teeth of Cal. as long as tube. Stalks 1–3-flowered. Bracts ternate, lanceolate. Lowest L. obovate; upper oblongo-cuneate. Stip. ovate, exceeding L.-stalk. **a.** 3, 4. *Sandy shores.* s. Sic."—GUSS.

7. **coronillifolius.** "Glaucous, with short adpressed pubescence. Stems slender, much branched. Leg. terete, straight. Seeds globose. Bracts ternate, smaller than calyx. Stip. ovate, longer than the wingless L.-stalk. Lts. *small*, thick, all obovate. **p.** 4, 5. *Sandy shores.* Mondella at Palermo."—GUSS.

8. **patens.** "Stems diffuse, produced yearly. Hairs somewhat adpressed. Leg. 2–6, straight, hairless. Teeth of Cal. shorter than tube. Lts. obovato-cuneate; those of ternate Bracts and of upper L. oblongo-lanceolate, acute. Stip. ovate, exceeding linear L.-stalk. **p.** 4, 5. *Grassy hills.* San Martino, near Palermo, Caputo, S. Anna, Sagana, &c., in Sicily."—GUSS.

9. **commutatus.** Silky. Stems few, erect, or ascending. Leg. 2–5, straight. Bracts ternate, lineari-spatulate, about equalling calyx. L. spatulato-cuneate, on a short dilated stalk. Stip. ovate. **w.** 4, 5. *Sandy shores.* Trapani in the Isl. of Ronciglio."—GUSS.

b. *Teeth of Calyx equal.*

10. **Dioscoridis.** "Branched, erect. Leg. about 2, long, torulose. Common stalk much exceeding L. Teeth of Cal. lanceolate, longer than tube. Bracts ovate, longer than calyx. Stip. ovate, shorter than L.-stalk. Lts. obovate, emarginate, somewhat fleshy, glaucous. (**a.** PERS.) Nice."—DC. *from figure in Allioni.*

11. **angustissimus.** Hairy, prostrate. Leg. 1–3, even, hairless, five or six times calyx, very slender; their common stalk about twice as long as L. Teeth of Cal. hairy, longer than tube. Bracts unequal or solitary. Stip. semicordate. Lts. elliptico-cuneiform, hairy. **a.** 5. *Barren coasts.* s. and m. Eur. Devonshire.

12. **hispidus.** Desf. Stems numerous, prostrate. Leg. 2–6, about three times calyx, even, hairless, dotted. Common stalk far exceeding L. Teeth of Cal. longer than tube. Bracts lanceolate. Stip. ovate or semicordate. Lts. villous, cuneiform. **a.** 6, 7. *Coasts.* Devonsh. w. and s. Fr. It. Jersey. *Includes* L. parviflorus. Desf. which has pod only as long as calyx

13. **ciliatus.** "Prostrate. Leg. usually solitary, sessile, hairless. Teeth of Cal. longer than tube, nearly as long as corolla. L. lanceolate, smooth, ciliate, as well as calyx. (**a.** Sic.—DC.) *Moist meadows.* Calabria."—TEN.

14. **lateralis.** Hairy, branched, prostrate. Lts. obovate. Stip. and Bracts ovato-lanceolate, somewhat acute. Teeth of Cal. linear, longer than tube. Leg. about 2, small, with a hirsute suture. Sic."—Guss. *from* Presl.

uliginosus Schk Sm 15. **major.** Stems nearly erect, hollow. Leg. 6–12, drooping, straight, on a very long common stalk. Teeth of Cal. stellate before flowering. p. 6–8. *Moist shade.* ✓

16. **corniculatus** L. Stems prostrate. Leg. spreading, 2–5, on a long common stalk. Teeth of Cal. connivent before flowering. Wings broadly ovate. p. 5–9. *Pastures.* ✓

β. *tenuis.* Kit. Teeth of Cal. shorter than tube. *According to Mr. Borrer this is an annual. According to Koch* (Lotus tenuiflorus) *it may always be distinguished from* L. corniculatus *by the much narrower wings.* sp ? Gris

17. **decumbens.** Poir "Somewhat hairy. Stems decumbent. Stalks long, 3–4-flowered. Bracts lanceolate, ternate. Teeth of Cal. somewhat longer than tube. Wings oblongo-obovate. Leg. straight, spreading. Lower Lts. obovato-cuneate, obtuse; upper oblongo-cuneate, acute. Upper Stip. ovato-lanceolate. p. 4, 5. *Moist grassy fields.* Sic."—Guss.

β. *tenuis,* Guss. Lts. and Stip. of upper L. lineari-lanceolate, acute. Sic.

18. **conimbrensis.** Brot Stems slender, somewhat branched. Leg. solitary, bowed, cylindrical, very long. Common Fl.-stalk much shorter than L.! Middle Lt. obovate; lateral lanceolate. a. 5. *Rare. Moist.* s. Eur. Frejus. Sic.

178. TETRAGONOLOBUS.

1. **purpureus.** Moench Decumbent. Leg. 1–2, hairless, with broad wings. Common Stalk about equal to L. Bracts exceeding calyx. Stip. ovate. *Fl. dark purple.* a. 4, 5. *Meadows and fields.* It. *occasionally.* ✓

2. **conjugatus.** Link Hairy, nearly erect. Leg. 1–2, hairless, with very narrow wings. Common Stalk shorter than L. Bracts ternate, acuminate, as long as calyx. Stip. ovate, acuminate. *Fl. purple.* a. 5, 6. *Moist fields.* Sic. Montp.?

3. **biflorus.** Hairy, decumbent. Leg. 1–3, hairy, with narrow wings. Common Stalk far longer than L. Bracts ternate, smaller than calyx. Stip. orbiculari-oblong, acuminate. *Fl. yellow.* a. 5, 6. *Fields.* Sic.

4. **siliquosus.** Roth Hairy, decumbent. Leg. 1, hairless, with very narrow wings. Common Stalk far exceeding L. Bracts lineari-obovate, shorter than calyx. Stip. ovate, somewhat obtuse. *Fl. yellow.* p. 6. *Moist meadows.* s. and m. Eur. ✓

β. *maritimus.* L. Nearly smooth. L. somewhat fleshy.

179. PSORALEA. L.

1. **palæstina.** Morris Lts. pinnato-ternate; those of lower L. ovate; of upper lanceolate. Stalks furrowed. p. 7, 8. Port Juvenal.

2. **bituminosa.** L. L. pinnato-ternate. Lts. ovato-lanceolate; of lowest L. subrotundo-ovate. Stalks (subangular, Guss.) (læves, DC.) p. 7, 8. *Dry.* mdt. Fr. It. *The shape of the Lts. is very various. I find the L.-stalk always more or less furrowed.* ✓

Subtribe 3. Astragaleæ.

180. GLYCYRHIZA. L.

1. **glabra.** L. Lts. ovate, somewhat retuse, glutinous beneath. Spikes stalked, shorter than L. Fl. distant. Leg. smooth. Seeds 3–4. p. 6–8. *Clayey fields.* Bamberg. Sologne. *Escapes.* s. Fr. It. ✓

2. **echinata.** Lts. ovato-lanceolate, mucronate, hairless; the terminal sessile. Spikes capitate, on very short stalks. Leg. oval, mucronate, echinate. Seeds 2. p. Apulia. ✓

181. GALEGA. Tourn

1. **officinalis.** L. Lts. lanceolate, mucronate, hairless. Stip. broad lanceolate. Rac. exceeding L. p. 7, 8. *Gravel.* s. Eur. e. G. ✓

182. ROBINIA. D.C

1. **Pseudacacia.** L. Stipules spinescent. Branches rod-like. Rac. loose, pendent, hairless. Leg. hairless. Lts. ovate. T. *Naturalized in sandy soils.*

183. COLUTEA. L.

1. **arborescens.** L. Leg. closed. Claws of Standard short and gibbous. Stalks about 6-flowered. Lts. elliptic, retuse. l.S. 5, 6. *Thickets.* s. Eur. Nancy. ✓

2. **orientalis.** Du Roi Leg. gaping at top. Claws of Standard very small, obtuse. Stalks 4–5-

flowered. Lts. obovate, emarginate, glaucous. **S.** 6. *Hills, vineyards.* Rulsdorf. Hoenstadt near Halle.

184. PHACA. L.

A. *No division in the Legume. Flowers white or yellowish.*

1. **frigida.** L. Lts. 4–5 pair, ovato-oblong. Stip. ovato-oblong. Stem hairless, simple. Leg. oblong, stalked, somewhat hirsute. **p.** 7, 8. *High pastures.* Alps.

2. **alpina.** Jacq. Lts. 9–12 pair, oblong, obtuse, downy. Stip. lineari-lanceolate. Stem branched, downy. Leg. compressed, semi-ovate, acute, nearly hairless. **p.** 7, 8. *High stony.* s. Alps. Pyrenees.

B. *Legume incompletely 2-celled. Flowers purplish or variegated white and purple.*

Gerardi Vill. Clarion

3. **glabra.** Lts. 6–7 pair, ovali-oblong, acute, hairless. Stem branched, prostrate. Fl.-stalk exceeding L. Wings (of Corolla) entire. Leg. stalked, turgid, hairless. **p.** 7. *Lower mountains* of Prov.

4. **astragalina.** L. Lts. 8–12 pair, ovate, with adpressed hairs on both sides. Stem short, decumbent. Fl.-stalks exceeding L. Wings entire. Keel *violet*, nearly as long as *bluish* standard. Leg. stalked, pendent, covered with black hairs when young. **p.** 7, 8. *High pastures.* Alps. Pyr.

5. **australis.** L. Lts. 6–8 pair, lineari-lanceolate, hairless; odd one sessile. Stem branched, tufted, ascending, hairless. Fl.-stalks exceeding L. Wings bifid. Keel *dark*, much shorter than *white* or *yellowish* standard. Leg. ovoid, stalked. **p.** 7, 8. *High rough pastures.* Alps. Pyr.

185. OXYTROPIS. D.C.

A. *Upper Suture pressed in, but not winged.*

1. **lapponica.** Gaud. Somewhat caulescent, ascending, hairy. Lts. lanceolate, acute. Fr.-stalks at last twice as long as L. Rac. short, 6–12-flowered. *Fl. pink.* Leg. pendulous, on a stalk half as long as tube of calyx. **p.** 7. *High.* Mts. of Vallais at Zermatt and Tesch.

2. **montana.** DC. Nearly stemless. Lts. elliptico-lanceolate. Scape hardly exceeding L. Rac. short, 6–12-flowered. *Fl. pink or purple.* Leg. erect, on a stipe or stalk within the calyx, as long as tube of calyx. **p.** 7, 8. *High pastures.* m. Eur.

β. *neglecta.* Rac. lax. *High gravel.* Abr.

3. **cyanea.** Bieb. Nearly stemless. Lts. oblong, acute. Scape equal to L. Rac. short, 6–12-flowered. Leg. erect, on a stipe half as long as tube of calyx. **p.** 7, 8. Above Zermatt in Nicolaithal. standard ½ longer than keel

4. **triflora.** Hoppe. Stemless. Lts. oblong, acute. Scape as long as L. Rac. 3-flowered. Leg. erect, on a stipe half as long as tube of calyx. **p.** 7, 8. *High stony.* Heiligenblut.

B. *Upper Suture winged internally.*

i. *Lower Suture not winged.*

5. **pilosa.** D.C. Stem erect. Hairs soft. Lts. lanceolate, acute. Stip. nearly free. Spikes ovato-oblong. Stalks axillary, exceeding L. Leg. erect, terete, subulate, villous. **p.** *Sandy and rocky hills.* s. and e. Alps.

6. **campestris.** D.C. Lts. about 12 pair, lanceolate, silky. Stip. attached to L.-stalk. Scape about equal to L. Bracts shorter than calyx. Fl. erect. Leg. erect, sessile, inflated, downy. **p.** 7, 8. *Gravelly mountain pastures.* m. Eur.

β. *sordida.* Lower part of Standard purplish. Keel with a dark spot.

γ. *cærulea.* Blue. Fuscherthal in the Salzburg Alps.

δ. *viscosa*, Pers. Lts. linear, viscid. Scape exceeding L.

7. **fœtida.** D.C. Lts. about 20 pair, lineari-lanceolate, viscid, hairless. Scape woolly upwards, somewhat exceeding L. Heads few-flowered. Bracts shorter than calyx. Leg. erect, sessile in calyx, inflated. **p.** 7, 8. *Very high gravelly.* w. Alps.

ii. *Lower Suture with a wing reaching to that of the upper.*

Halleri Bunge

8. **uralensis.** D.C. Stemless, villous. Lts. oblongo-lanceolate. Scape exceeding L. Heads ovate, of many spreading flowers. Lower Bracts exceeding calyx. Leg. erect, acuminate. **p.** 5–7. *Subalpine gravel.* Vallais. Tyrol. Carniola. Pyr. Scot.

186. ASTRAGALUS. L.

A. Fl. purplish or white. Stipules not attached to L.-stalk, or only to its base.

i. Upper Stip. united opposite to L. Sp. 1–6.

ii. Stipules separate.

a. Fl. distant. Sp. 7–9.

b. Fl. in a dense spike or head. Root annual. Sp. 10–13.

c. Calyx bladder-like! Sp. 14.

O. pyrenaica. Gr & G. near cyanea
cal. more hairy. standard ½ longer than keel
flowers blue

B. Fl. yellowish. Stipules not attached to L.-stalk.

i. Stipules separate.

a. Root annual. Sp. 15–18.

b. Root perennial. Sp. 19–23.

ii. Stipules united opposite to L. Sp. 24.

C. Stipules attached to L.-stalk.

i. L.-stalk persistent, spinescent. Fl. sessile, axillary. Sp. 25–29.

ii. L.-stalk not spinescent. Sp. 30–34.

A. *Flowers purplish or white. Stipules free from L.-stalk.*

i. *Upper Stipules united opposite L.*

1. **leontinus.** Wulf Diffuse. Hairs adpressed, fixed in the middle. Lts. 6–8 pair. Heads on a 3-edged stalk, exceeding L. Leg. ovoid, villous, sessile in calyx. **p.** 7, 8. *Stony mountains.* m. and e. Alps.

2. **purpureus.** Lam Hairy, diffuse. Lts. with two terminal teeth. Head of Fr. globose, on a stalk exceeding L. (Germen on a stipe one-sixth of its own length, Koch.) Leg. erect, hirsute, ovoideo-triquete. Cells 3-seeded. **p.** 7, 8. *Mountains.* Alps of Provence, Nice, and s. Tyrol. Valle Staphora in Apennines of Piedmont.

3. **Onobrychis.** L Diffuse, pubescent. Lts. 7–12 pair, lanceolato-oblong. Heads of Fr. cylindrico-oblong. Stalks exceeding L. Standard linear, truncate, twice as long as wings. Leg. 3-edged, ovate, acuminate, hirsute, sessile. Cells 4-seeded. **p.** 6, 7. *Dry mountain pastures.* Sw. Austria. Dau. Prov.

4. **hypoglottis.** L Hairy, diffuse. Lts. 8–10 pair, oblong. Heads many-flowered. Stalk exceeding L. Calyx covered with white and black hairs. Leg. erect, deeply channeled, compressed, hairy. (Germen on a stipe half its own length, Koch.) **p.** 5–7. *Dry pastures.*

5. **bayonensis.** Lois Procumbent, diffuse, hoary with adpressed hairs. Lts. 8–10 pair, very small. Stalks 4–6-flowered, not exceeding L. Cal. nearly sessile. Leg. on very short stipe, downy; length twice width. **p.** 6, 7. *Sandy shores.* w. Fr.

6. **arenarius** L Diffuse, hoary. Hairs adpressed. Lts. 3–4 pair, linear, obtuse. Rac. 4–8-flowered. Stalk somewhat shorter than L. Leg. downy, on a stipe nearly as long as tube of calyx; length three times width. **p.** 6, 7. *Sandy fields and pine woods.* e. G.

ii. *Upper Stipules separate.*

a. *Flowers distant. Legume linear.*

7. **austriacus.** Jacq Procumbent, diffuse. Lts. 7–10 pair, hairless, linear, truncato-emarginate. Lower Stip. concrete. Rac. stalked, exceeding L. Wings of Cor. bifid. Leg. sessile, drooping. **p.** 7, 8. *Open dry.* Dau. n. It. Austria.

8. **sulcatus.** L Erect, hairless. Stem furrowed. Lts. 7–10 pair, lineari-lanceolate. Lower Stip. concrete. Rac. stalked, exceeding L. Wings of Cor. entire. Leg. on short stipe, erect. **p.** 6, 7. *Moist grassy.* lower Austria.

9. **argenteus.** L-Jacq Diffuse, grey with hairs fixed in the middle. Lts. 5–7 pair, linear or lanceolate; of the lower L. ovate. All Stip. distinct; lower very small. Rac. stalked, exceeding L. Leg. straight, twice as long as calyx, hoary. **p.** 5. *Open stony.* Islands Cherso, Osero, and Veglia.—Koch.

b. *Flowers in a dense head. Root annual.*

10. **pentaglottis.** L Procumbent, diffuse, somewhat villous. Stip. ovate. Lts. 4–6 pair, obovate, retuse. Heads on stalks exceeding L. Leg. semiovate, acute, tubercled. Cells 1-seeded. **a.** 6, 7. *Dry hills.* Corbières. Hyères. Cors.

11. **Glaux.** L Procumbent, villous, somewhat hoary. Stip. ovato-lanceolate. Lts. 8–10 pair, oblong, somewhat acute. Heads on stalks exceeding L. Standard linear. Leg. erect, ovate, mucronate, villous. Cells 1-seeded. **a.** 6. At Bombaz between Avignon and Cavaillon. Bezières.

12. **Stella.** Gouan Procumbent, sometimes stemless. Stip. lanceolate. Lts. 8–10 pair, elliptic-oblong. Heads on stalks not exceeding L. Leg. at last stellate, somewhat terete, furrowed on back, mucronate, hirsute. Cells 5–10-seeded. **a.** 5. Montpellier. Toulon.

13. **sesameus.** L Diffuse, villous. Stip. lanceolate. Lts. 9–10 pair, elliptic-oblong. Heads axillary, sessile. Leg. erect, somewhat terete, acuminate, furrowed on back, mucronate, villous. Cells 7–8-seeded. **a.** 5, 6. *Dry.* s. Europe.

c. *Calyx bladder-like!*

14. **vesicarius.** L Procumbent, diffuse, silky. Hairs fixed in the middle. Lts. 5–7 pair, elliptic. Heads on stalks exceeding L. Cal. clothed with black adpressed and white spreading hairs. Leg. very hirsute, as long as calyx. **p.** 5, 6. *Dry calc. mountains.* s. Fr. Carniola. Trieste.

B. *Stipules not attached to L.-stalk. Flowers yellowish.*

i. *Stipules separate.*

a. *Root annual.*

15. **contortuplicatus.** Procumbent, somewhat villous. Lts. 7–9 pair, obovate, emarginate. Rac. on stalks much shorter than L. Leg. twisted, channeled on back, villous. **a.** 5, 6. *Grassy hills.* Sic.

16. **hamosus.** L. Diffuse. Lts. about 12 pair, cuneate, emarginate, hairless above. Stalks about 6-flowered, shorter than L. Leg. much curved, terete, furrowed on back, subulate at top. **a.** 5, 6. *Grassy.* s. Fr. Italy.

17. **bœticus.** L. Procumbent, pubescent. Stip. membranous, ovate, acuminate. Lts. 10–15 pair, obovate, retuse. Spikes on very short stalks. Leg. erect, oblong, straight, with a hooked point. **a.** 4. *Uncult.* Sic.

18. **epiglottis.** L. Procumbent, villous. Stip. lanceolate, covered with black hairs. Lts. 6–7 pair, lineari-oblong. Heads on very short stalks. Leg. depressed, somewhat cordate, acuminate; the margins folded back, spreading, pubescent. *Fl. white.* **a.** *Woody hills.* Prov.

b. *Root perennial.*

* *Spike stalked. Legume sessile.*

19. **asper.** Jacq Erect, rough with adpressed hairs fixed in the middle. Stip. lineari-lanceolate. Lts. 12–15 pair, oblong. Spike-stalk far exceeding L. Fl. erect. Leg. oblong, closely pubescent, acuminate. **p.** 5, 6. *Grassy.* lower Austria.

20. **depressus.** L. Diffuse or stemless. Stip. ovate, membranous, ciliate. Lts. 9–11 pair, obovate. Spike-stalk shorter than L. Leg. linear, sub-terete, straight, somewhat deflexed. **p.** 5, 6. *Rough open.* Alps.

21. **glycyphyllos.** L. Procumbent, nearly smooth. Stip. ovate, acuminate. Lts. 5–6 pair, ovate. Spike ovato-oblong, on stalks shorter than L. Leg. oblongo-subulate, curved, erect. **p.** 6, 7. *Meadows and thickets.*

** *Spike nearly or quite sessile. Flowers yellow.*

22. **alopecuroides.** L. Erect. Lts. about 20 pair, ovato-lanceolate. Stip. ovato-lanceolate, acuminate. Spikes oblong. Divisions of Cal. setaceous, shorter than tube, nearly equaling corolla. **p.** 6, 7. Near Embrun, Dau.?

23. **narbonensis.** Gouan Erect, downy. Stip. lanceolate. Lts. about 20 pair, oblongo-linear. Head subglobose. Divisions of Cal. setaceous, shorter than corolla, as long as tube. **p.** *Rough.* Narbonne.

ii. *Stipules united.*

24. **Cicer.** L. Procumbent, diffuse, somewhat pubescent. Stip. lanceolate. Lts. 10–13 pair, elliptic-oblong, mucronate. Spike ovate. Stalk shorter than L. Leg. inflated, hirsute, mucronate. **p.** 6, 7. *Sandy mountain pastures. occ.*

C. *Stipules attached to L.-stalk.*

i. *L.-stalk persistent, spinescent. Flowers axillary.*

25. **Pseudo-Tragacantha.** Fl. 7–8, sessile, crowded, *yellow.* Cal. 5-partite. Segments setaceous, longer than tube. Lts. 8–9 pair, oblong, somewhat acute, pointless, hoary. **s.S.** *Gravel amongst mountains.* Abruzzi.

26. **siculus.** Fl. crowded, sessile, *white or flesh-coloured.* Cal. 5-partite, awned, very villous, falling short of corolla. Lts. 4–8 pair, oblong or cuneate, mucronate, villous when young. **s.S.** 5, 6. *Dry hills.* Ætna. Madonie. Cal.

27. **aristatus.** L'Herit Stalks about 6-flowered, very short. Teeth of Cal. long, setaceous. Lts. 6–10 pair, oblong, pointless, hairy, green. Cells of Leg. hardly half divided. **s.S.** 5, 6. *Rocky.* s. Alps. Pyr. Sic.

28. **sirinicus.** Ten Fl. in spiked racemes, 2–10. Stalks somewhat shorter than L. Cal. with black and white hairs. Teeth setaceous. Cor. three times as long as calyx. Lts. 14 pair, elliptico-oblong, somewhat obtuse, with adpressed hairs on both sides. Leg. villous. **s.S.** *Stony pastures.* Abruzzi. Mts. of Sirine.

29. **Tragacantha.** L. Stalks about 4-flowered, about equalling L. Cal. cylindrical. Teeth short and obtuse. Lts. 9–11 pair, elliptic, hoary. **s.S.** 5. *Sandy shores.* Mars. Narb. Corsica. Trapani.

ii. *L.-stalk not spinescent. Calyx not bladder-like.*

30. **caprinus.** Nearly stemless. Lts. 9–13 pair, oblong, ciliate. Rac. about half as long as L. Divisions of Cal. subulate. Cor. hairless, *yellow.* Leg. stalked, ovate, inflated, beaked. **p.** 3–5. *Dry hills.* Sic.

31. **exscapus.** L Stemless, soft, hirsute. Lts. 12–15 pair, ovate. Fl. crowded, nearly

sessile on root. Divisions of Cal. long, subulate. Cor. hairless. Leg. sessile, ovate, acuminato-mucronate, hirsute. **p.** 5, 6. *Mountains.* Vallais. Thuringia. Austria.

32. **monspessulanus.** L Nearly stemless. Lts. 12–20 pair, elliptic; the outer smallest. Scape exceeding L. Teeth of Cal. long, subulate. *Fl. purple.* Leg. terete, subulate, curved upwards, reticulate, at last hairless, completely 2-celled. Ovules 12–20. **p.** 5, 6. *Dry hills.* m. and s. Eur. ✓

33. **Wulfeni.** Koch Nearly stemless. Lts. 12–20 pair, ovate or lanceolate. Scape nearly as long as L. Teeth of Cal. linear. *Fl. purple.* Leg. lineari-oblong, curved downwards, 2-celled. Ovules 24–30. **p.** 5. *Stony pastures.* Trieste. Istria.

34. **incanus.** L Stemless, hoary. Lts. 6–9 pair. Scape hardly exceeding L. Fl. in heads. Teeth of Cal. subulate, short. *Fl. purple.* Leg. 2-celled, nearly cylindrical, incurved, mucronate, about three times calyx, hoary with short hairs. Ovules about 12. **p.** 4, 5. *Open stony.* s. Fr. ✓

187. BISERRULA. L

1. **Pelecinus.** L *Fl. small, blue.* Spikes ovate, on stalks shorter than L. **a.** 5. *Dry.* s. Eur. ✓

Tribe III. *HEDYSAREÆ.*

188. SCORPIURUS. L

1. **muricata.** L Leg. hairless. Inner Ribs smooth; outer armed with small blunt tubercles. **a.** 5, 6. *Fields.* mdt. Fr. K. Nap.

2. **sulcata.** L Leg. hairless. Inner Ribs smooth; the four outer armed with rigid distant prickles. **a.** 5, 6. *Fields.* Tuscany. Port Juvenal. ✓

3. **subvillosa.** L Leg. hairless. Inner Ribs smooth; the six or eight outer armed with somewhat crowded prickles. **a.** 5, 6. *Fields and uncult.* s. Fr. Istria. It. ✓

4. **acutifolia.** vic Leg. covered with short hairs. Innermost Ribs smooth; the eight or ten outer armed with very short crowded prickles. *Var. of Sp.* 3 ? **a.** *Sandy.* Bonifacio. v of 3 G.v.G

5. **vermiculata.** L Leg. hairless. Innermost Ribs wanting; the ten outer armed with crowded, broad, obtuse tubercles. **a.** 5, 6. *Fields.* Agen. Montpellier. ✓

189. CORONILLA. L

A. *Legume nearly terete, the joints hardly separating. Claws of Petals about three times as long as calyx.*

1. **Emerus.** L Stip. very small. Lts. 5–7, obovate. Stalk 3-flowered. **S.** 3–5. *Thickets, walls, &c.* s. Eur.

B. *Legume compressed. Joints readily separating. Claw of Standard not much exceeding calyx.*

i. *Flowers yellow. Plant hairless.*

2. **glauca.** L A shrub. Stip. small, lanceolate, entirely separate. Lts. 5–7, obovato-oblong, mucronate, glaucous; lowest remote from stem. Umbel 7–8-flowered. **S.** 2–5. *Calc. rocks.* Narb. Sic. Nice. ✓

valentina L

3. **stipularis.** Lam A shrub. Stip. very large, circular, separate, deciduous, but leaving a ring on the stem. Lts. 7–9, obovate, mucronulate, glaucous; lowest remote from stem. Umbel 6–8-flowered. **S.** 3. *Calc. rocks.* Terracina. Capri. s. It. Sic.

4. **juncea.** L A small shrub. Stip. very small, on a continued ring. L. few and small. Lts. 3–7, lineari-oblong; lowest remote from stem. Umbel 5–7-flowered. **s.S.** 5, 6. *Rocky hills.* mdt. F. ✓

vaginalis L

5. **minima.** Jack Woody, diffuse. Stip. united opposite to L.; the uppermost large, membranous, deciduous. Lts. 7–13, obovate; lowest remote from stem. Umbel 4–10 7–8-flowered. *C. vaginalis* of Linnæus, &c. **w.** 5–7. *Mountain pastures.* Alps. ✓

minima L D.C

6. **coronata.** Stems numerous, diffuse. Stip. small, united opposite L. Lts. 5–9, obovate, somewhat mucronate, *glaucous*; lowest close to stem. Umbel 6–12 8–10-flowered. **w.** *Dry.* m. and s. Fr. Vall. It. *C. minima* of Koch. ✓

7. **montana.** Scop Stems single, erect, herbaceous. Stip. united opposite L. Lts. 7, ovate, mucronate, *somewhat glaucous*; lowest near to stem. Umbel 15–20-flowered. **p.** 6. *Calc. mountains.* Jura. e. Ger. ✓

ii. *Flowers yellow. Plant rough with rigid, deflexed hairs.*

8. **parviflora.** Willd Herbaceous, much branched. Lts. 9, cuneate, emarginate, hairless. Stip. ovate, very small. Umbel 5-flowered. Stalk

exceeding L. Leg. bowed, terete. **p.** *Open hills.* Avezzano.

iii. *Flowers purplish or white.*

9. **cretica.** L Herbaceous, ascending. Stip. very small, acute. Lts. 11–13, cuneate, retuse; lowest remote from stem. Umbel 3–6-flowered. **a.** 5, 6. *Grassy banks.* It.

10. **varia.** L Herbaceous, diffuse. Stip. very small, acute. Lts. 9–13, oblong, mucronate; lowest near stem. Umbel 16–20-flowered. Leg. erect. **p.** 6, 7. *Dry meadows and pastures.* s. and m. Eur.

190. ASTROLOBIUM. DC

1. **ebracteatum.** D.C Fl. about equalling L. L. all pinnate. Lts. numerous, equal, elliptic-oblong; lowest remote from stem. Leg. terete, curved. **a.** 4, 5. *Sand.* Jersey. w. Fr. It.

2. **repandum.** DC Fl.-stalks somewhat shorter than L. Stip. joined, sheathing. Lower L. simple, oval, emarginate; upper pinnate. Lowermost Lts. near stem, subrotund. Lomentum incurved. **a.** 4, 5. *Sandy shores.* s. Sic.

3. **scorpioides.** DC Fl.-stalks longer than L. Stip. joined, sheathing. L. ternate. Lower Lts. subrotund, very small; terminal large, oval. **a.** 5–7. *Fields.* Coasts of Mdt.

191. ORNITHOPUS. L

1. **compressus** L Fl.-stalk shorter than L. Lts. villous. Leg. compressed, longitudinally reticulate, curved at top. Joints oval. *Fl. yellow.* **a.** 4, 5. *Sand.* s. Fr. It.

2. **perpusillus.** L Fl.-stalk longer than L. Lts. somewhat villous. Teeth of Cal. not half as long as tube. Leg. somewhat compressed, hairless, nearly straight. Beak very short. Joints subrotund. *Fl. pink and white.* **a.** 5, 6. *Sandy.* *Not at Rome nor in Sic.*

3. **roseus.** L Fl.-stalks longer than L. Teeth of Cal. nearly as long as tube. Leg. somewhat compressed, reticulate. Beak nearly as long as last joint. **a.** 5. *Sandy.* La Teste. Mt. de Marsan. w. Fr.

192. HIPPOCREPIS. L

A. *Perennial. Sinus of Fruit less than half a circle.*

1. **comosa.** L Herbaceous, diffuse. Stalk of Umbel exceeding L. Leg. curved, sinuate on both sides. **p.** 5–7. *Calc. banks.* *Not in Sic.*

2. **glauca.** Ten. Herbaceous, ascending. Stalk of Umbel exceeding *glaucous* L. Leg. somewhat curved, sinuate only on one side. Joints always 5. **p.** 5, 6. *Calc. rocks.* Mte. Magello. Sic.

B. *Annual. Sinus of Fruit more than half a circle.*

3. **multisiliquosa.** L Stalks 2–4-flowered, shorter than L. Leg. nearly smooth, very much curved. **a.** 3–5. *Sandy shores, open, stony, or sandy.* Sic.

4. **ciliata.** Willd Stalks 2–6-flowered, shorter than L. Legume at last almost straight, tuberculato-hispid at the seeds. **a.** 4–6. *Dry calc.* s. Fr. It. *Probably a var. of* H. multisiliquosa.

5. **unisiliquosa.** L Fl. axillary, sessile, solitary. Leg. curved. **a.** 3–5. *Calc. hills and fields.* s. Fr. It.

6. **velutina.** Stalks 1–2-flowered, shorter than L. Leg. velvety, glandular at joinings. Extremities of the sinus produced into horns! **a.** Port Juvenal.—DUBY.

193. SECURIGERA. DC

1. **Coronilla.** DC *Habit of a Coronilla.* **a.** 5, 6. *Fields and dry meadows.* s. Eur.

194. HEDYSARUM. L

1. **coronarium.** L Stem diffuse. Lts. 3–5 pair, elliptic, downy beneath and on margin. Rac. oblong, crowded. Wings, standard, and keel nearly equal. Leg. prickly, hairless. **p.** 5. *Meadows, vineyards.* It.

2. **humile.** L Stem nearly erect. Lts. 7–9 pair, lineari-cuneate. Fl. in racemes. Wings not exceeding half keel. Standard shorter than keel. Leg. of two or three rounded, tubercled, and villous joints. **p.** (Cev. Mtp., GOUAN.) (Dax, GERARD.) (Sic., DC.)

3. **pallidum.** Procumbent. Lts. 6–7 pair, elliptico-orbicular, pubescent. Spikes oblong, crowded. Standard as long as keel. Wings shorter. Leg. with rounded, prickly joints. **p.** 5. Canal of Fusaro near Naples.

4. **spinosissimum.** DC Stem diffuse. Lts. 5–7 pair, oblong, emarginate, (acute, GUSS.) Heads 3-flowered; the lateral sessile. Wings shorter than keel and standard. Leg. pubescent, with hooked prickles. **a.** 5. Mars. Frejus. K. Nap. v of [illegible]

5. **capitatum.** Desf Decumbent. Lts. 6–7 pair,

oblong; of lower L. obcordate, obtuse. Rac. ovate. Stalk exceeding L. Fl. 3–10, all on short stalks. Standard equal to keel. Joints of Leg. orbicular, pubescent, and with hooked prickles. **a.** 4, 5. *Argillaceo-calcareous hills!* Sic. Cors.

6. **obscurum.** L Erect. Lts. 5–9 pair, ovate. Stip. united, sheathing. Bracts longer than flower-stalk. Leg. pendulous, quite smooth. **p.** 7, 8. *Moist mountain pastures.* Alps from Austria to Provence. ✓

195. ONOBRYCHIS.

1. **sativa.** Lam Nearly erect. Stip. mostly distinct. Leg. rugose, somewhat aculeate. (Teeth only half as long as the crest, Koch.) Spike elongated. Keel shorter than standard. Wings not exceeding calyx. (Cal. about equal to corolla, J. W.) Lts. mucronate, nearly hairless. **p.** 6, 7. *Chalky hills.*

2. **montana.** DC "Subdecumbent. Stip. united opposite L. Leg. rugose, denticulate at back. Sides rugose, downy. Spike short. Keel longer than standard. Wings shorter than calyx. Lts. cuneato-lanceolate, mucronate, hairless. **p.** 6, 7. *High meadows.* Alps. Pyr."—DC. *According to Koch, the comparative length of keel and standard is not to be trusted.* ✓

3. **arenaria.** DC v of. / g-g "Ascending. Leg. keeled, reticulate, with an elevated disc, aculeate. The *intermediate marginal prickles subulate*, in length equalling breadth of the crest. Wings shorter than calyx. **p.** *Open calcareous hills.* Trieste. s. Switz."—Koch. *He quotes DC., who says "dorso subdenticulato."*

4. **conferta.** "Declining. Stip. mostly distinct. Leg. hoary, rugose. Prickles of the sides short; of the back long. Rac. ovate. Keel as long as standard. Wings shorter than calyx. Lts. oblongo-elliptic, mucronulate, downy beneath. **p.** *Mountains.* Abruzzi."—DC.

5. **supina.** DC "Diffuse, somewhat hirsute. Leg. villous, rugose, somewhat aculeate, cristato-dentate on the back. Spike ovato-oblong, stalked. Wings and keel shorter than calyx. Lts. oblong, hardly mucronulate. **p.** 6. *Meadows and uncult.* Vallais. Prov. Dau."—DC. ✓

6. **alba.** Desf. v Boreau "Stem erect, velvety. Leg. downy, crested with somewhat long prickles. Disc rugose, with short prickles. Spike cylindrical. Wings shorter than calyx. Keel exceeding calyx. Lts. linear, mucronate, silky beneath. **p.**"—DC. *Calc. hills.* Gargano. Iapygia.—Ten.

7. **saxatilis.** All Ascending. Leg. hairless, with an entire crest. Disc rugose, without prickles. Lts. linear. **p.** 5, 6. *Open, stony hills.* Prov. Nicc. ✓

8. **Caput Galli.** Lam Erect or diffuse. Leg. downy, everywhere prickly. Spike few-flowered. Cal. about equalling corolla. Lts. oblong, mucronate, pubescent. **a.** 5. *Rough.* s. Eur. ✓

9. **Crista Galli.** Lam Supine. Leg. hairless. Crest in oblong, flat, toothed divisions. Disc somewhat prickly. Spike few-flowered. Cal. about equal to corolla. Lts. obtuse or retuse, pubescent. **a.** *Open, rough.* s. Eur.—DC.; *but I find it in no partial Flora.*

10. **æquidentata.** "Erect, nearly smooth. Leg. hairy. Disc with short spines. Crest divided into nearly equal, entire teeth. Spike-stalk of Fr. twice as long as L. Flowers distant. Lower Lts. obovate; upper oblong, somewhat pubescent. **a.** 3, 4. *Dry calc. hills.* Alicata. Palmi."—Guss. ✓

11. **depressa.** "Diffuse. Leg. quite hairless, very prickly. Prickles nearly equal. Hollows between the prickles of the disc smooth. Rac. few-flowered, as long as L. Cal. equal to corolla. Keel shorter than standard. Lts. cuneato-obovate, retuse or mucronate, hairless. Sic."—Guss. *from* Presl.

Tribe IV. *VICIEÆ.*

196. CICER. L

1. **arietinum.** L Cal. hardly gibbous. Teeth equalling wings. All L. unequally pinnate. Lts. serrate. **a.** 6, 7. *Escapes* in s. Eur. ✓

197. VICIA. L

A. Upper part of Style equally hairy all round. Sp. 1–3.

B. Style bearded. Rac. on long stalks.

- **i.** Upper Teeth of Cal. minute, on a broad base.
  - **a.** Veins of Lts. divergent. Stip. broad, dentate. Sp. 4–6.
  - **b.** Veins nearly parallel to midrib. Stip. semihastate. Sp. 7–16.
- **ii.** Upper Teeth of Cal. triangular, much shorter than lower. Sp. 17–20.
- **iii.** Teeth of Cal. nearly equal. Sp. 21–27.

C. Style bearded. Fl. nearly sessile.

- **i.** Standard hairy. Sp. 28–31.

ii. Standard smooth.

a. Teeth of Cal. nearly equal. Sp. 32–45.

b. Teeth unequal, 3 and 2, all far shorter than tube. Sp. 46.

c. Calyx Teeth 3, 2, and 1. Sp. 47–52.

A. *Upper part of Style equally hairy all round. Lts. with diverging veins.*

This section, with *Orobus sylvaticus*, should perhaps be united to *Ervum*; but I have preserved the Linnæan genera, till a better arrangement is settled.

1. **cassubica.** L. Teeth of Cal. unequal, shorter than tube. Rac. many-flowered, hardly equalling L. Lts. numerous, ovali-oblong. Lower Stip. semihastate. Margin entire. Leg. elliptic. **p.** 6, 7. *Mountain woods.* s. Eur.

2. **sylvatica.** L. Teeth of Cal. unequal, shorter than tube. Rac. many-flowered, exceeding L. Lts. numerous, ovato-oblong. Lower Stip. broad, laciniate. Leg. obtusely lanceolate. **p.** 6–8. *Woody hills.*

3. **pisiformis.** L. Teeth of Cal. unequal, shorter than tube. Rac. many-flowered, equalling L. Lts. about 10, broadly ovate; lowermost close to stem. Stip. broad, inciso-dentate. Leg. oblong. **p.** 5, 6. *Woody hills.* m. Eur.

B. *Style bearded. Racemes on long stalks.*

i. *Upper Teeth of Calyx minute, on a broad base.*

a. *Veins of Lts. divergent. Stipules broad, dentate.*

4. **dumetorum.** L. Rac. 6–12-flowered. Blade of standard about half as long as haft. Lts. 6–10, elliptico-ovate. Leg. oblong, compressed. **p.** 7, 8. *Mountain woods.* m. and s. Eur.

5. **altissima.** Desf Rac. with 8–16 nodding flowers. Blade of Standard longer than haft. Lts. 6–12, elliptico-ovate. Leg. oblong, acuminate. **p.** 5, 6. Ætna, Milo, Randazzo, Sic.

6. **polysperma.** Ten Fl. 8–10, separate, erect. Blade of Standard longer than haft. Lts. 8–16, oblong, with long abrupt points. Leg. lineari-lanceolate. Seeds 14–20. **p.** *Thickets.* Bagnoli, Astroni near Naples. v. Sprg

b. *Outer veins of Lts. nearly parallel to midrib. Stipules semihastate.*

7. **ochroleuca.** Hairless. Rac. many-flowered, exceeding L. Fl. yellow. Blade of Standard equal to haft. Lts. 8–30, oblong. Leg. hairless. Seeds oval. **p.** 5, 6. *Rocky calc.* K. Nap. Sic.

8. **consentina.** "Rac. many-flowered, exceeding L. Fl. remote, *yellowish.* Stem and L.-stalks pubescent. Lts. linear, truncate, mucronate; the lower elliptic. Stip. semisagittate. Calabria, at Falde della Sila, and between Cosenza and Rogliano. Differs from *ochroleuca* in its broader L., shorter racemes, larger flowers, and by being everywhere villous."—Ten.

9. **Cracca.** L Stem hairy. Rac. crowded, exceeding L. *Fl. blue.* Blade of Standard equal to haft. Lts. about 20, oblong. Hairs adpressed. Leg. on a stipe, falling short of calyx. **p.** 6, 8. *Hedges and thickets. Not in Sicily.*

10. **Gerardi.** Vill Stem hairy. Rac. crowded, exceeding L. *Fl. blue.* Blade of Standard equal to haft. Lts. 20–30, oblong. Hairs spreading. Stipe of oblong Leg. exceeding calyx. **p.** 6, 7. *Thickets.* s. Eur.

11. **elegans.** Guss "Cal. coloured. Base gibbous. Teeth ciliate, triangular; middle lower Tooth longer and narrower, as long as tube. Stalks 10–30-flowered, exceeding L. Fl. secund, somewhat approximate, *blue.* Keel with a bloody spot on each side. Lts. 16–24, linear, awned with adpressed hairs. Stip. entire; lower semisagittate; upper linear. Leg. oblongo-lanceolate, obsoletely nerved, pendulous. Seeds compressed, globose. **p.** 5, 6. *Open hills and thickets.* Sic."—Guss. v of 22 Sprg.

12. **tenuifolia.** Roth Rac. many-flowered, far exceeding L. *Fl. purplish.* Blade of Standard twice as long as haft. Lts. about 20, linear, acute. Leg. lanceolate. **p.** 6–8. *Woody.* Fr. Ger.

13. **biennis.** "Teeth of Cal. unequal. Stalks many-flowered, hardly exceeding L. Partial stalks very long. Lts. (about 12?) lanceolate, hairless. The common Stalk sulcate. Stip. semisagittate, acute. Leg. ascending, compressed, short, hairless. **p.** *Sea-side thickets.* Fusaro. *Like* V. Pseudo-Cracca."—Ten.

14. **ambigua.** "Nearly smooth. Stalks 6–16-flowered, exceeding L. Lts. 8–16, oval. Stip. semisagittato-lanceolate, often dentate. Leg. oval, compressed. **a.** 3–5. *Grassy hills.* Sic. *Differs from Sp.* 15, *in being stouter, the lower Stipules broader, more frequently toothed, the Lts.* 2 *or* 3 *times as broad, Fl. larger and not spotted, Standard more dilated*

upwards, and more deeply emarginate.”—Guss.

Host
varia. Grig. Ten

15. **dasycarpa.** “Nearly smooth. Upper Teeth of Cal. very short; lower acute, nearly equal to tube. Stalks many- (10–20) flowered, somewhat exceeeding L. Lts. 12–20, oblongo-lanceolate. Stip. semisagittato-lanceolate; lower dentate. Leg. broadly oval, compressed. Seeds globose. **a.** 3, 5. *Grassy hitls, thickets, and sandy shores.* Sic. Nap.”—Guss.

16. **villosa.** Roth “Villous. Rac. many-flowered, somewhat lax, exceeding L. *Fl. purplish.* Blade of Standard half as long as haft. ✓ Lts. 12–16, lineari-lanceolate. Margin of Stip. entire. Leg. elliptico-rhomboid. **a.** 5–7. *Corn.* m. and s. Eur.

ii. *Upper Teeth of Calyx triangular, much shorter than lower.*

17. **Pseudo-Cracca.** Bertol “Diffuse, downy. Rac. lax, 6–12-flowered, exceeding L. Fl. approximate, nearly of one colour. Blade of Standard about half as long as haft. ✓ Lts. 8–14. Lateral veins nearly parallel to midrib. Stip. dentate. Leg. elliptic, short, hairless. **a.** 3–5. *Sandy cult.* It.

18. **atropurpurea.** Desf “Downy. Rac. 4–12-flowered, crowded, hardly exceeding L. Fl. tipped with dark purple. Blade of Standard ✓ about half as long as haft. Lts. 8–14, oblong. Leg. oblong, very hirsute. **a.** 4, 5. *Cult.* s. and e. Sic. s. e. It. Toulon.

19. **perennis.** D.C “Villous. Teeth of Cal. setaceous, hairy, as long as tube. Stalks few-flowered, equalling L. Stems 4-edged. Lts. oblongo-linear, mucronate. Cirrhi nearly simple. Stip. semisagittato-lanceolate, generally dentate at base. (Fl. dark purple, Lois.) Styles long, somewhat clavate. Leg. oblong, compressed, pubescent, reticulate. Seeds round, compressed, *bay.* **p.** *Corn.* Elne in Rous. Isl. of Hyères. *Perhaps not distinct from* V. atropurpurea.”—Duby. 18.

20. **onobrychoides.** L “Rac. of 6–12 distant flowers, far exceeding L. *Fl purple.* Blade ✓ of Standard about half as long as haft. Lts. 12–20, linear. Lateral veins nearly parallel to midrib. Leg. lineari-oblong. **b.** 5, 7. *Corn.* Vall. Istr. It. s. Fr.

21* Corsica

iii. *Teeth of Calyx nearly equal.*

21. **disperma.** DC “Cal. nearly equalling corolla! Rac. 2–6-flowered, shorter than L. Lts. 16–20, lineari-oblong. Leg. oblong, compressed, hairless. Seeds variegated. **a.** *Stony.* mdt. Fr. Cors.

Lapey

22. **argentea.** “Hoary. Teeth of Cal. nearly equal, as long as tube. Stalks many-flowered, somewhat exceeding L. Fl. secund, lax. Stem 4-edged. Lts. oblongo-linear, mucronate. ✓ Cirrhi 0! Stip. semisagittato-lanceolate. Style long, somewhat club-shaped. Leg. oblong, compressed, downy. **p.** Montagne de Castanese, Pyr.”—Duby.

23. **Bivonæ.** “Pubescent. Teeth of Cal. setaceous, nearly equal. Stalks 3–11-flowered, shorter than L. Lts. 6–18, oblong, somewhat obtuse, mucronate. Stip. broad, inciso-dentate. Leg. oblong, compressed, somewhat pubescent. Seeds globose. **a.** 4, 5. *Hedges and grassy hills.* Sic. Luc.”—Guss. “Stip. not always dentate.”—Ten.

24. **glauca.** “Teeth of Cal. nearly equal, setaceous. Stalks 4–8-flowered, at last exceeding L. Lts. 6–10, oblong, glaucous, pubescent. Stip. semisagittate, entire. Stems hairless. Leg. hairless, oblong, somewhat turgid. Seeds globose. **p.** 5, 6. *Stony hills.* Madonic.”—Guss.

25. **triflora,** Guss. “Hairless. Lateral lower Teeth of Cal. lineari-lanceolate; middle Tooth longer and narrower. Stalks 2–5-flowered, shorter than L. Stem angular. Lts. 6–14, lineari-oblong, pointless. Stip. bipartite. Divisions subulate, nearly entire. Leg. oblong, compressed, nervoso-reticulate. **a.** 4, 5. *Cult.* Sic.”—Guss.

26. **syrtica.** Dub “Stem flexuose, striate. Lts. 8–12, distant, nearly smooth, linear. Stip. semisagittate, somewhat laciniate. Stalks in pairs: one short, 1-flowered; the other 3–4-flowered, shorter than L. Teeth of Cal. linear, as long as tube. **a.** *Corn.* Dax.”—Duby.

27. **bithynica.** L Teeth of Cal. as long as tube. Stalks 1–2-flowered, sometimes exceeding L. Lts. 2–6, oblongo-lanceolate. Stip. ✓ semihastate, dentate. Leg. oblong, villous. **a.** 5, 6. *Clayey borders.* Eng. Fr. adr. G. It.

C. *Style bearded. Flowers nearly sessile.*

i. *Standard hairy. Plants annual.*

28. **pannonica.** Jacq “Lowermost Teeth of Cal. as long as tube. Fl. 2–4. Lts. 10–16, oblong. Stip. lanceolate, marked beneath. Leg. oblong, hairy, deflexed. **a.** 5, 6. *Fields.* Austr. Istr.

29. **striata.** Bieb “Hairy. Teeth of Cal. awned, longer than tube. Fl. 2–4, pendulous. Standard silky. Lts. mucronate; the upper oblong, acute; lower obovate, retuse. Stip.

ovato-lanceolate, with a spot. Leg. reflexed, silky. **a.** 4, 5. *Pastures.* Ætna."—Guss. is 28 Sv G.

30. **hybrida.** L Hairy. Teeth of Cal. about half as long as tube. Fl. solitary, nearly sessile. Blade of Standard equal to haft, not much dilated. Lts. 8–12, obovate. Stip. semihastate. Leg. hairy. **a.** 4, 5. *Corn.* s. Eur.

31. **spuria.** Villous. Teeth of Cal. not a quarter as long as tube. Fl. 1–2, somewhat stalked. Blade of Standard twice as long as haft, and much broader. Lts. 6–12; lower obcordate; upper oblong. Stip. semihastate; uppermost ovate. Leg. elliptico-oblong, hairy. **a.** 3, 4. Sic.

ii. *Standard smooth.*

a. *Teeth of Calyx nearly equal.*

32. **pimpinelloides.** Teeth of Cal. nearly equal; longest exceeding tube. Fl. usually solitary, nearly sessile. Lts. of lower L. incise. Stip. marked. Leg. erect, oblong, hairless. **a.** 4, 5. *Shade.* Albano. Marino.

33. **oroboides.** Wulf Teeth of Cal. nearly equal, somewhat recurved; longest equal to tube. Fl. 3–6. Lts. 4–6, ovato-lanceolate, acuminate. Cirrhus 0. Stip. very small, ovato-lanceolate. Leg. linear, hairless. **p.** 6, 7. *Woody hills.* Sty. Carn. Carinthia.

34. **peregrina.** L Teeth of Cal. nearly equal; longest equal to tube, incurved. Fl. solitary, stalked. Blade twice as long as haft, deeply emarginate. Lts. 10–14, linear, truncate, hairless. Stip. semihastate, entire. Leg. lanceolate, somewhat pubescent. **a.** 5, 6. *Corn.* s. Eur.

35. **sativa.** L Teeth of Cal. nearly equal, and equalling tube. Fl. 2, sessile. Blade of Standard equal to haft. Lts. 10–14; lower obcordate; upper elliptico-oblong. Stip. dentate, marked. Leg. oblong, downy, nearly erect. **a.** 5, 6. *Cult.*

36. **angustifolia.** Roth Teeth of Cal. nearly equal, and equalling tube. Fl. usually solitary. Blade of Standard equal to haft. Lts. 6–10; of lower L. obcordate; of upper linear. Stip. dentate, marked. Leg. linear, spreading, smooth when ripe. **a.** 5, 6. *Fields.*

β. Bobartii. Koch Fl. solitary. Lts. of upper L. linear, truncate.

37. **maculata.** "Teeth of Cal. as long as tube, spotted on the sinus. Lts. obcordate, mucronate. Stip. semisagittate, dentate, marked; the lower ones narrower, entire. Leg. 1–2, erect, hairless. **a.** 3–5. *Hedges and thickets.* Sic. *Differs from* V. Cosentini *in lower Stip. and Teeth of Cal.*"—Guss.

38. **heterophylla.** "Lts. pubescent, mucronate; lower obovate; upper oblong, obtuse. Stip. semisagittate, dentate; uppermost marked. Leg. linear, solitary, erect, hairless. Seeds *small,* globose. **a.** 4, 5. *Sandy beds of torrents.* s. e. Sic. *Perhaps a variety of* V. maculata."—Guss.

39. **Cosentini.** "Teeth of Cal. longer than tube. Lts. pubescent, oblong or lineari-cuneate, mucronate, truncate or emarginate, obtuse. Lower Stip. broad, laciniate, unmarked; upper semisagittate, with spot. Leg. 1–2, linear, erect, hairless. Seeds elliptic, compressed. **a.** 4, 5. *Corn and grass.* Catania. *Lts. narrower, and Leg. smaller and more compressed and torulose than in* V. sativa."—Guss.

40. **cuneata.** Guss "Pubescent. Stems short. Teeth of Cal. lanceolate, acuminate, as long as tube. Fl. solitary. Lts. obcordate or lineari-cuneate, deeply emarginate, mucronate. Stip. semisagittate, dentate, marked. Leg. lineari-lanceolate, compressed, spreading, hairless. Seeds globose, somewhat compressed, of a velvety black. **a.** 3, 4. *Corn.* s. Sic. *Has the appearance of* V. lathyroides."—Guss.

41. **cordata.** Wulf Cal. cylindrical. Teeth lanceolato-subulate, nearly equal, as long as tube. Fl. 1–2, nearly sessile. Lts. 10–14; of the lower L. obcordate; of upper lineari-cuneate, deeply emarginate. Leg. linear. Seeds globose, *variegated.* **a.** *Corn.* Carn. adr. G.

42. **lathyroides.** L Teeth of Cal. lineari-subulate, nearly equal, shorter than tube. Fl. solitary, nearly sessile. Lts. 4–6, obovate; of upper L. narrower, truncate. Stip. semisagittate, entire. Leg. linear, hairless. Seeds cubical! granular. **a.** 4, 5. *Gravelly.*

43. **amphicarpa.** Dorth Cal. cylindrical. Teeth equal, linear, half as long as tube. Lower Lts. obcordate, mucronate; upper linear, retuse and mucronate. Upper Leg. lineari-oblong, inclined, reticulate; lower subterraneous, ovate, compressed. **a.** 4. *Dry gravel.* Mtp. Toulon.

44. **grandiflora.** Scop Teeth of Cal. straight, nearly equal, half as long as tube. Fl. 2–4. Standard obovate. Lts. 10–14, obcordate or oblong. Stip. ovate. Leg. spreading, oblong, hairless. **a. b.** 5, 6. *Shade.* It. adr. G.

45. **pyrenaica.** Pourr Teeth of Cal. nearly

equal, one-fourth as long as tube. Fl. solitary. Blade of Standard very broad, emarginate; twice as long as haft. Lts. obcordate. Stip. semihastate. Leg. oblongo-linear. **p.** 6–9. *Pastures.* Pyr.

b. *Teeth of Calyx unequal, two upper shorter.*

✓ 46. **sepium.** L. Upper Teeth of Cal. very short, incurved; longest tooth shorter than tube. Fl. 3–4. Blade of Standard about equal to haft. Lts. 10–12, ovate. Stip. semihastate. Leg. oblongo-lanceolate. **p.** 5, 6. *Shade.*

c. *Teeth of Calyx unequal,* 2, 2, and 1.

47. **lævigata.** Sm. Teeth of Cal. somewhat unequal; longest equal to tube. Fl. solitary. Lts. about 8, elliptico-lanceolate. Stip. cloven, not marked. Leg. elliptic, quite smooth. **p.** 7, 8. *Among pebbles on seashore.* Weymouth.

✓ 48. **lutea.** L. Shortest Teeth of Calyx shorter than tube. Fl. solitary, nearly sessile. Standard emarginate. Lts. 10–16, oblong. Leg. hairy, horizontal. **a.** 6, 7. *Corn.* Eng. *rare.* s. Eur.

49. **hirta.** Balb Very hirsute. Shortest Teeth of Cal. longer than tube. Fl. solitary, sessile. Lts. of lower L. obovate or oblong; of upper linear, acute. Lower Stip. bipartite, marked. Leg. oblongo-lanceolate, very hairy. **a.** 4–6. *Open cult.* Rome. Sic. v. of 48 Gris.

50. **tricolor.** Teeth of Cal. about equal to tube. Fl. 3, inclined. Lts. 10–18, oblong, villous beneath. Stip. small, semihastate, marked. Leg. lineari-lanceolate, reflexed, smooth. **a.** 4, 5. *Thickets and banks.* It.

✓ 51. **narbonensis.** L. Longest Teeth of Cal. equal to tube. Fl. 1–3. Lts. about 6, oval. Sutures of Leg. serrato-ciliate. **a.** 5, 6, *Cult.* Fr. adr. G. It.

β. *serratifolia.* L. and stipules deeply serrate.

52. **Faba.** L. Teeth of Cal. unequal, 2, 2, and 1; longest shorter than tube. Fl. 2–4. Lts. of upper L. 4 or 6, obovate, acuminate. Cirrhi 0! Leg. coriaceous, pubescent. **a.** 6, 7. *Escapes from cultivation.*

198. ERVUM L.

A. *Style filiform, equally hairy all round.*

✓ 1. **hirsutum.** L. Stalks 2–6-flowered, about equal to L. Cal. Teeth lineari-lanceolate, somewhat longer than tube. Leg. oblong, hirsute 2-seeded. Lts. about 12, linear. Stip. semihastate. **a.** 6, 7. *Cult.*

β. *pubescens.* Stip. linear. Leg. torulose. Lucania.

✓ 2. **tetraspermum.** L. Stalks 1–2-flowered, without awn, about equalling L. Cal. Teeth shorter than tube. Leg. oblong, smooth. Seeds 4, subglobose. Lts. 4–8, linear. Stip. semihastate. **a.** 6, 7. *Cult. Not in Sic.*

✓ 3. **gracile.** DC Stalks 1–4-flowered, awned, at last twice as long as L. Cal. Teeth shorter than tube. Leg. linear, smooth. Seeds 6. Lts. 6–8, linear. Stip. semihastate. **a.** 6, 7. *Fields.* I. of Wight. s. and m. Eur.
pubescens DC

4. **Bibersteinii.** Guss "Cal. Teeth lineari-setaceous, much longer than tube. Leg. compressed, somewhat hairy. Seeds 4–6, subglobose. Lts. 4–6, pubescent, oblong, mucronulate; upper lanceolate. Stip. entire, semisagittate; upper linear. **a.** 3, 4. *Hill thickets.* Sic."—Guss.

✓ 5. **monanthos.** L. Stalks 1-flowered, as long as L. Cal. Teeth longer than tube. Leg. elliptico-oblong, hairless. Seeds about 3. Lts. about 14, linear, truncate, emarginate. One Stip. sessile, linear, entire; the other stalked, semilunar, deeply laciniate. **a.** 6, 7. *Cult.* Rhine. s. Fr. Nice.

✓ 6. **Ervilia.** L. Rac. 2–3-flowered, shorter than L. Cal. Teeth much longer than tube. Leg. oblong, contracted between the seeds. Lts. about 20, oblong, mucronulate. Stip. semihastate. **a.** 6, 7. *Corn.* s. G. s. Fr.

B. *Style somewhat flattened at top, marked with a line of hairs.*

✓ 7. **Lens.** L. Stalks 2–3-flowered, awned, equalling L. Cal. Teeth three or four times as long as tube, and equalling corolla. Leg. somewhat rhomboid, smooth, 2-seeded. Lts. about 12. Upper L. with simple cirrhi. Stip. semicordate. **a.** 6, 7. *Cult. and escapes.* s. Eur.

8. **nigricans.** M Pubescent. Stalks about 2-flowered, awned, exceeding L. Cal. Teeth three times as long as tube, and equalling corolla. Leg. somewhat rhomboid, smooth. Seeds 2. Lts. 6–10. Cirrhi generally wanting. Stip. semihastate, denticulate at base. **a.** 4, 5. *Dry hills.* Sic.

9. **Lenticula.** L. Stalks 1-flowered, not awned, exceeding L. Cal. Teeth longer than tube, shorter than corolla. Leg. (somewhat rhomboid,

Koch) pubescent. Seeds 2, globose, with black dots. Lts. 6–8, linear. Cirrhi generally wanting. Stip. very small, semihastate. Margin entire. **a.** 4–6. *Dry stony.* Carinthia. Rome. K. Nap. Sic.

β. *uniflorum.* Leg. smooth. Stip. dentate.

199. PISUM. L

1. **sativum.** L Stalks 1–2-flowered. Seeds globose. Lts. 6, ovate. Stip. semicordate at base, exceeding common flower-stalk. **a.** 5–7. *Cult.*

2. **arvense.** L Stalks usually 1-flowered. (Seeds angulato-impressed, Koch.) Lts. 4–6, roundish, ovate. Stip. semicordate, dentate at base, exceeding common flower-stalk. **a.** *Escapes. Naturalized in woods.* Tivoli.

3. **elatius.** Bieb Stalks 1–2-flowered. Lts. about 6, elliptic or oblong. Stip. semicordate, dentate at base, not half as long as common flower-stalk. **a.** ? 6 ? *Thickets.* Istria.

4. **maritimum.** L Stalks many-flowered, shorter than L. Lts. 5–8, elliptic, entire. Stip. hastate, with acute auricles. (**a.** DC.) **p.** 7. *Stony shores.* s. Eng. Pie. ? Ger.

200. LATHYRUS. L

A. Standard even at base.
  i. Stalks many-flowered. Plant perennial.
    a. One pair of Lts. Sp. 1–5.
    b. More than one pair. Sp. 6–8.
  ii. Stalks 1–3-flowered. Plant annual.
    a. No true L. Sp. 9, 10.
    b. One pair of Lts. Sp. 11–23.
    c. More than one pair. Sp. 24.
B. Standard with a conical protuberance on each side of base. Sp. 25–30.

A. *Standard even at base.*

i. *Perennial. Stalks many-flowered.*

a. *One pair of Lts.*

1. **tuberosus** L Stalk 3–6-flowered, three times as long as L. Cal. veinless. Teeth broadly acute. Leg. reticulate. Seeds smooth. Stems 4-edged. Lts. elliptico-oblong. Stip. semisagittate. *Fl. pink.* **p.** 7, 8. *Fields.* m. and s. Eur. ✓

2. **pratensis** L Stalks twice as long as L. Cal. nerved. Teeth finely acute. Leg. obtusely veined. Seeds smooth. Stem 4-edged. Lts. lanceolate, nerved. Stip. large, sagittate. *Fl. yellow.* **p.** 6, 7. *Moist meadows.* ✓

3. **sylvestris.** L Stalks 3–8-flowered, as long as L. Leg. oblongo-linear, reticulate. Seeds warty, half surrounded by hilum. Wing of L.-stalk much narrower than that of stem. **p.** 7, 8. *Woods and thickets.* ✓

4. **platyphyllos.** Retz Stalks exceeding L. Leg. oblongo-linear. Seeds somewhat warty, half surrounded by hilum. Wing of L.-stalk as wide as that of stem. **p.** 7, 8. *Thickets.* n. and m. Ger. v of 3 Gr & G ✓

5. **latifolius.** L Stalks exceeding L. Leg. oblongo-linear, reticulate. Hilum only occupying one-third of circumference of seed. Wing of L.-stalk as wide as that of stem. **p.** 7, 8. Austria. Istria. style longer thicker than 3 Gr & G. ✓

α. *Lts. about* 1 *inch wide,* 2½ *long.*

β. *ensifolia.* Lts. about $\frac{1}{10}$ inch wide, 7½ long. *In compliance with Koch, I join this to* L. latifolius.

b. *More than one pair of Lts.*

6. **heterophyllus.** L Stalks 6–8-flowered, exceeding L. Leg. oblongo-linear, reticulate. Seeds warty. Hilum occupying hardly one-third of the circumference. Wide wings to L.-stalk and stem. Lower L. with only 1 pair of Lts. **p.** 7, 8. *Mountain thickets.* m. Eur.

7. **palustris** L Smooth. Stalks 3–5-flowered, somewhat exceeding L. Cal. Teeth triangular, shorter than tube. Stem winged. L.-stalk not winged. Lts. 6, nervoso-venose, oblong. **p.** 7, 8. *Boggy meadows. occ.* ✓

8. **cirrhosus.** Seringe "Smooth. Stalks many-flowered, exceeding L. Cal. Teeth unequal, narrow, shorter than tube. Leg. oblong, finely reticulate. Stem winged. L.-stalk winged. Lts. 5–6, elliptic, reticulate. Tendrils very much branched. Olette in Pyr. Cors."—DC., *who puts this among the annual plants, with from* 1 *to* 3 *flowers.*

ii. *Annual. Stalks* 1–3-*flowered.*

a. *No true L.*

9. **Aphaca.** L Stalks 1-flowered. Tendrils filiform. Stip. large and leaf-like, sagittato-cordate. **a.** 6–8. *Sandy fields. occ.* ✓

10. **Nissolia** L Stip. small, subulate. Stalk dilated into a grass-like L. Tendrils 0. **a.** 5. *Gravelly banks. occ.* ✓

b. *One pair of Lts.*

11. **sphæricus.** Retz Stalks short, thick, 1-flowered, awned. Cal. Teeth finely acute, longer than tube. Leg. linear, nervoso-striate, hair- ✓

less. Seeds about 10, smooth. Hilum ovato-oblong. Stem 4-edged. Lts. ensiform, nerved. **a.** 3–5. *Dry open.* s. Fr. It.

12. **stans.** Visiani Stalks 1-flowered, shorter than L.-stalk, with joining near the base, and a small bracteole instead of awn. Leg. linear, venoso-striate, hairless. Seeds 10–15, smooth. Hilum nearly circular. Ovary hairless. **a.** 6, 7. *Corn.* Fiume. Osero. v of 13 Gr&G.

13. **inconspicuus.** L Stalks very short, 1-flowered, with minute bracteole. Cor. very small, flat, venoso-striate. Leg. linear, downy. Seeds 8–15, smooth. Lts. lineari-lanceolate, finely nerved. **a.** 6, 7. Istr. It. Rous. Lang.

14. **micranthus.** Gerard "Stalks 1-flowered, very short. Cal. nearly as long as corolla. Leg. straight, spreading, cylindrical, somewhat villous. Stem 4-edged. Lts. lineari-lanceolate. Tendrils simple, very short. *Standard purple.* **a.** ? *Fields.* Provence. *Perhaps a var. of* L. inconspicuus."—DC. is 13 Gr&G.

✓ 15. **angulatus.** L Smooth. Stalks 1-flowered, filiform, equalling L., awned near the top. Cal. Teeth acute, as long as tube. Leg. linear, without veins or hairs. Seeds 10–15, tubercled. Stem 4-edged. Lts. linear, acuminate. Tendrils trifid. **a.** 6. *Vineyards and corn.* Fr. Trieste. Vall.

16. **annuus.** L Smooth. Stalks 1–2-flowered, generally shorter than L. Bracteole very small. Cal. Teeth lanceolate, hardly longer than tube. *Fl. yellow.* Leg. oblong. Seeds 6–8, tubercled. Stem winged. **a.** 5, 6. *Cult.* mdt. Fr. adr. Ger. It.

✓ 17. **Cicera.** L Stalks 1-flowered. Bracteole very small. Cal. Teeth lanceolate, two to three times as long as tube. *Fl. purplish.* Leg. oblong, straight, and channeled on the back, nearly four times as long as broad, reticulate, hairless. Seeds about 4, smooth. Stem winged. Lts. lineari-lanceolate. **a.** 4–6. *Cult.* mdt. Fr. adr. Ger. It.

✓ 18. **sativus.** L Stalks 1-flowered. Bracteole very small. Teeth of Cal. lanceolate, two to three times as long as tube. Leg. ovate, winged and arched on the back, about twice as long as broad. Seeds 4–5, smooth. Stem winged. Lts. lineari-lanceolate. **a.** 5, 6. *Fields.* m. Eur.

19. **erythrinus.** Presl "Stalks 1-flowered, exceeding L.-stalk. Leg. oblongo-lanceolate, compressed, nerved, not winged. Seeds angular. Stems 4-edged. Lower Lts. lanceolate; upper long, linear. Tendrils of lower L. wanting; of upper 2–3-cleft. Stip. semisagittato-lanceolate. **a.** 3–5. *Open hills.* Sic."—Guss. is 18 Gr&G.

20. **setifolius.** L Stalks 1-flowered, filiform, shorter than L., with a minute bract near the top. Teeth of Cal. acute, as long as tube. Leg. semioval, reticulate, hairless. Seeds globose, warty. Stem 4-edged. Lts. very narrow. **a.** 4–6. *Stony.* mdt. Eur. ✓

21. **hirsutus.** L Stalks 1–3-flowered, awned, exceeding L. Teeth of Cal. triangular, acuminate, nearly equal, as long as tube. Leg. oblong, hirsute, veinless. Seeds about 6, globose, verrucose. Stems winged. Lts. elliptico-oblong. **a.** 6, 7. *Corn.* m. and s. Eur. ✓

22. **hirtus.** "Stalks 1-flowered, hardly exceeding L. Teeth of Cal. ovate, as long as tube. Leg. oblongo-obovate, hirsute. Stems 4-edged (not winged). Seeds verrucoso-punctate. Lts. oblong or obovate. Stip. semisagittato-linear, hardly equalling L.-stalk. **a.** DC. Lucania and Calabria."—Ten.

23. **odoratus.** L Stalks 2–3-flowered, far exceeding L., not awned. Teeth of Cal. broad, longer than tube. Leg. oblong, veinless, hirsute. Seeds globose. Stems winged. Lts. ovate. **a.** 5. *Moist hedges and thickets.* Sic.

c. *More than one pair of Lts.*

24. **grandiflorus.** L Nearly smooth. Stalks 1–3-flowered, exceeding L. Teeth of Cal. very unequal, shorter than the broad, campanulate tube. Standard large, transversely elliptic. Leg. oblongo-linear, hairless, reticulate. Stem angular. Lts. 5 pair. Stip. lineari-lanceolate, semisagittate. **p.** 4–6. *Woody hills.* Sic.—Guss.

B. *Standard with a projection on each side of base. Lower L.-stalks without Lts. Stem and L.-stalks winged.*

25. **alatus.** Ten Stalks 2–3-flowered, exceeding L. Teeth of Cal. unequal, shorter than tube. Leg. flat, closely reticulate, hairless. Seeds many, angular, mottled. Lts. 6–8, lanceolato-oblong. Stip. lanceolate, unequally sagittate. **a.** *Corn and hedges.* Naples. is 26β Gr&G

26. **Clymenum.** L Stalk 2–6-flowered, equalling L. Teeth of Cal. unequal; longer as long as tube. Leg. oblong, compressed, slightly reticulate, the seminiferous suture tumid. Seeds mottled, compressed. Lower Lts. 5–6, oblong. Stip. semisagittate. **a.** 5, 6. *Fields.* mdt. Fr. It. ✓

27. **tenuifolius.** Desf. Stalk 2–3-flowered, exceeding L. Teeth of Cal. nearly equal, shorter than tube. Leg. oblong, compressed, hairless. Seeds smooth, grey with black spots. Lower L.-stalks linear, acuminate; upper with 5–6 linear L. Lower Stip. very small or wanting; upper semisagittate, large. **a.** 3, 4. *Fields, woods, and thickets.* Sic. is 26 Gr G.

28. **articulatus.** L. Stalk 2–3-flowered, equalling L. Teeth of Cal. nearly equal, shorter than tube. Leg. knobby, slightly reticulate; seminiferous suture tumid. Seeds compressed, velvety, black. Lower L.-stalks linear, acuminate; upper with about 6 linear Lts. Stip. semisagittato-lanceolate. **a.** s. Fr. Cors.

29. **purpureus.** "Stalk 1-flowered, shorter than L. Lower Petioles lanceolate; upper with 4–6 ovato-lanceolate Lts. Stip. semisagittato-lanceolate. *Corn.* e. Calab. L. alatus *of Fl. Gr. Fl. of the size of those of* L. odoratus."—DC. is 26 β Gr G.

30. **Ochrus.** DC. Stalk short, 1-flowered. Teeth of Cal. somewhat unequal, as long as tube. Leg. winged on the seminiferous suture. Seeds numerous. Lower Petioles broad; upper with two or three ovate Lts. Lower Stip. 0; upper ovate. **a.** 4, 5. *Corn.* mdt. Fr. It.

201. OROBUS L

A. *Style flattened above, hairy on one side.* (O. atropurpureus *seems hardly to agree with this.*)

i. *One pair of Lts.*

1. **hirsutus.** Hirsute. Rac. few-flowered, twice as long as L. Teeth of Cal. subulato-setaceous, nearly equal, much longer than tube. Leg. compressed, hirsute. Lts. ovate, acute, with parallel nerves. **p.** *Woods.* Sila in Calabria.

ii. *Several pair of broad Lts.*

2. **vernus.** L. Stalks many-flowered. Fl. somewhat secund, nodding. Upper Teeth of Cal. very short; lower lanceolato-triangular, hardly as long as tube. Leg. smooth. Lts. 4–6, elliptic, acuminate, somewhat 3-nerved. **p.** 4, 5. *Woods.* Fr. Ger. It. Lorraine.

3. **variegatus.** Ten. Stalks many-flowered. Upper Teeth of Cal. very short; lower lanceolate, as long as tube. Leg. rough with glands. Lts. 4–6, ovate, acuminate, somewhat 3-nerved. **p.** 4, 5. *Woods.* Trieste. s. It. and Islands.

4. **luteus.** L. Rhizoma horizontal, with filiform fibres. Stalks many-flowered, ascending, hardly as long as L. Teeth of Cal. unequal, short. Leg. sessile. Seeds mottled, globose. Lts. 6–10, elliptic, glaucous beneath. Stip. dentate at base. **p.** 5, 6. *Mountain woods.* Fr. s. Ger. n. It.

5. **niger.** L. Rac. about 6-flowered, exceeding L. Upper Teeth of Cal. very short; lower subulate, about one-third as long as tube. Leg. obscurely reticulate. Style geniculate. Stem angular, flexuose. Lts. 6–12, oval or ovate, not nerved. Stip. lineari-lanceolate. **p.** 6, 7. *Woods.* s. and m. Eur.

6. **Jordani.** "Root of fasciculate tubers. Stalks 4–6-flowered, twice as long as L. Style geniculate. Leg. flat, hairless. Lts. 6–8, oblongo-lanceolate, cuspidate. Stip. semisagittato-subulate. **p.** *Moist meadows.* Lucania."—Ten.

7. **tuberosus.** L. Smooth. Rhizoma with detached rounded tubers. Rac. 2–4-flowered, hardly exceeding L. Upper Teeth of Cal. short and broad, ovate; lower lanceolate, shorter than tube. Leg. compressed, obscurely reticulate. Lts. 6, oval, oblong, lanceolate, or even linear, 3–5-nerved. Stip. semisagittate. **p.** 4, 5. *Woods.*

iii. *Lts. numerous, very narrow.*

8. **varius.** Sims. "Stem winged, somewhat branched towards the top. Lts. about 8, lineari-lanceolate. Stip. semisagittate. Margin entire. **p.** *Woods.* Near the chapel of Madonna della Corona at the foot of Mte. Baldo. *Standard purple. Wings and Keel yellowish.*"—Poll. *very rare.* v of 10 Koch

9. **canescens.** L. Stalks 3–5-flowered, twice as long as L. Teeth of Cal. nearly equal, triangular, shorter than tube. Leg. straight, compressed, longitudinally reticulate. Stem 4-edged. Lts. about 6, linear, many-nerved. Stip. semisagittato-subulate, about as long as common stalk. **p.** 6. Dau. Prov. Pyr.

10. **albus.** L. Rhizoma horizontal, with club-shaped fibres. Rac. 5–8-flowered, exceeding L. Teeth of Cal. lanceolate; lower much longest. Leg. compressed, somewhat flexuose. Style linear. Stem angular, winged at top. Lts. 3 pair, linear, nerved. Stip. semisagittate, broad, much shorter than common stalk. **p.** 5, 6. *Mountain meadows.* s. e. G. Abruzzi. Lucania.

11. **angustifolius.** L.? if not the v of 9. which is more likely "Stalks many-flowered, exceeding L. Fl. yellow. Stem simple. Lts. 2–3 pair, ensiform, acute, nearly sessile. Stip. subulate. **p.** Vicentine. Pdm."—Poll.

Desf

12. **atropurpureus.** Rac. 10–16-flowered, exceeding L. Fl. secund, nodding. Upper Teeth of Cal. very short; lower not one-third as long as tube. Style filiform. Stigma globose. Leg. reticulato-nervose. Stem striate. Lts. 2–3 pair, linear, acute, many-nerved. Stip. semisagittate, very narrow, about half as long as common stalk. **a.** 3, 4. *Moist meadows and fields.* Sic. e. Calabria.

13. **sessilifolius.** "Stalk exceeding L. Teeth of Cal. nearly equal, linear, hardly as long as tube. Style somewhat geniculate, somewhat club-shaped. Leg. narrow. Stem striate. Lts. 2 pair, lineari-subulate, approximate. Stip. semisagittato-subulate, much longer than common L.-stalk. **p.**"—DC. "*Shade.* Lucania." —Ten.

14. **saxatilis.** Vent Stalks 1-flowered, awned, much shorter than L. Teeth of Cal. nearly equal, triangular, nearly equal to tube. Leg. oblong. Stems weak. Lts. 2 pair, linear, ending in three teeth! Stip. semisagittate, very small. **a.** 4, 5. *Dry woods.* mdt. Fr. Cal. ✓

B. *Style cylindrical, hairy all round.*

15. **sylvaticus.** L Fl. numerous, at the top of the stalk. Upper Teeth of Cal. very short; lower subulate, shorter than tube. Seeds 1–3. Lts. numerous, oval. **p.** 5, 6. *Shady hills.* G. *very rare.* Br. *rare.*

In field cultivation we sometimes meet with Phaseolus, L *a genus easily known by its spirally twisted keel. The common species are* P. multiflorus, *with the stalk of the raceme exceeding the L., and* P. vulgaris, L *in which the stalk of the raceme falls short of the L.*

The Dolichos Catiang *is said also to be sometimes cultivated as a French bean.*

Tribe V. *PHASEOLEÆ.*

202. LUPINUS. Tourn

1. **albus.** Fl.-stalks alternate. Bracteoles 0. Upper Lip of Cal. entire; lower tridentate. Lts. obovato-oblong, villous beneath. **a.** 4, 5. *Cultivated in* s. Eur. *and escapes.*

2. **Termis.** Forsk Fl. alternate. Bracteoles setaceous, adpressed. Upper Lip of Cal. entire or somewhat bidentate; lower tridentate. Lts. obovato-oblong, villous beneath. **a.** 5. *Cultivated in* It. *and escapes.*

Savi

3. **varius.** Fl. alternate or in half whorls, bracteolate. Upper Lip of Cal. bidentate; lower hardly tridentate. Lts. oblong, villous beneath. **a.** 5. *Corn.* s. Fr.

4. **hirsutus.** L Rac. long. Fl. alternate; upper whorled. Bracts linear. Cal. bracteolate. Upper Lip bipartite; lower trifid, much shorter than corolla. Lts. 5–7, obovato-cuneate. Stem and L.-stalk covered with spreading hairs. **a.** 5, 6. *Corn.* Mdt.

5. **Cosentini.** "Downy. Rac. whorled. Bracts ovato-lanceolate, acuminate. Cal. bracteolate. Upper Lip bipartite; lower obsoletely tridentate. Leg. silky. Lts. 9–11, oblongo-cuneate. **a.** 3, 4. *Grassy, volcanic.* Catania." —Guss.

6. **micranthus.** "Hairs rigid. Rac. short. Fl. alternate. Bracts filiform. Cal. bracteolate, nearly as long as corolla. Upper Lip bipartite; lower trifid. Stem with spreading branches at base. Lts. obovato-spatulate. Leg. hirsute. **a.** 4, 5. *Dry sandy.* s. Sic." —Guss.

7. **pilosus.** "Fl. in whorled racemes. Cal. hairy, bracteolate. Upper Lip bipartite; lower entire. Lts. oblong, villous. **a.**"—DC. Luc. —Ten.

reticulatus Desv ✓

8. **angustifolius.** D.C. Fl. alternate. Bracts ovate. Partial Stalks very short, bracteolate, (ebracteolate, DC.) Upper Lip of Cal. bifid; lower entire. Leg. villous. Seeds 6, oval. Lts. linear. Pubescence adpressed. **a.** 4, 5. *Dry, sandy.* Fr. Sw. It.

9. **linifolius.** Roth Bracts elliptic, acuminate. Fl. alternate, bracteolate. Upper Lip of Cal. bifid; lower somewhat trifid. Seeds globose. Lts. linear, channeled. **a.** 4, 5. *Open sandy.* Rome. Sic. "Lts. broader than in *L. angustifolius.* Bracts more acuminate."—Guss.

10. **luteus.** L Fl. sessile, alternate, *yellow.* Bracts ovato-lanceolate. Cal. bracteolate. Upper Lip bipartite; lower tridentate. Seeds 2–4, roundish. Lts. 7–11, oblong; the lowermost obovate. **a.** 4, 5. *Sandy hills.* s. Fr. Sic.

XXXI. ROSACEÆ.

This order nearly coincides with the class *Icosandria* of Linnæus. The Petals or Stamens rise from a disc or tube connected with the calyx, and considered by Linnæus and others as forming part of it. The odd Lobe of the Calyx is at the top. The Stamens are some multiple of the Petals, or indefinite and numerous. Germens 1 or more, each with its style. L. alternate.

The Tribes are:—

1. AMYGDALEÆ.—Fruit a solitary drupe. Seeds 1 or 2, pendulous. Calyx deciduous . . . . Gen. 203, 204.
2. SPIRÆEÆ.—Fruit of several follicles. Seeds 1–6, suspended from the edges of the follicles. Calyx persistent . . . . . . Gen. 205.
3. DRYADEÆ.—Fruit of several dry or fleshy acini. Calyx persistent. Tube open . . . . Gen. 206–215.
4. SANGUISORBEÆ.—Fruit of several dry, indehiscent carpels. Attachment of Seed near to that of style. Calyx persistent. Tube contracted at top, embracing the seed . . . . Gen. 216, 217.
5. ROSEÆ.—Disc of Calyx contracted into a fleshy tube containing the seeds Gen. 218.
6. POMEÆ.—Fruit a Pome of 1–4–5 cells . . . . . . Gen. 219–225.

Tribe I. *AMYGDALEÆ.*

203. AMYGDALUS. L

1. **communis.** L L. lanceolate. Stalk at least equal in length to half the width of L. Serratures glandular. Tube of Cal. campanulate. Nut deeply pitted. **s.T.** 3, 4. *Calc. rocks on shore.* Sic.

2. **nanus.** L L. lanceolate, on a short stalk. Serratures without glands. Tube of Cal. cylindrical. Nut nearly smooth. **s.T.** 4. *Rocks.* Vienna, on the Danube.

3. **Persica.** L L. lanceolate, on a very short stalk. Drupe not bursting. Nut deeply wrinkled and pitted. **s.T.** 3, 4. *Cult. in open fields.* s. Europe.

204. PRUNUS. L

A. *Fruit downy. Nut obtuse at one end. Young L. convolute.*

1. **Armeniaca.** L Fl. sessile, solitary or in pairs, before L. L. somewhat cordate. **s.T.** 3, 4. *Cult. in open fields.* s. Europe.

B 2. **brigantiaca.** Vill Fl. nearly sessile, crowded, coetaneous with L. L. somewhat cordate, acuminate. **S.** 4. Briançon. Culz near Suza.
[illegible] to L v B Gr v G

B. *Fruit hairless, bloomy. Nut acute at both ends. Young L. convolute.*

3. **spinosa.** L Fr.-stalk generally solitary (smooth; young branches pubescent, KOCH). L. elliptic or lanceolate. Branches thorny. Fl. before the L. Fruit globose. **S.** 4, 5. *Hedges and thickets.—Boreau, Fl. du Centre, has two varieties of this:* β. macrocarpa, *with an ovoid Fr., much larger than in* α.; *and* γ. serotina, *with Fl. after L. He has also a* P. fruticans, *with Fr.-stalks in pairs, and Fr. as large as a small cherry.*

4. **insititia.** L Fr.-stalks usually in pairs (downy; young branches velvety, KOCH). L. ovato-lanceolate. Branches ending in a spine. Fl. before the L. Fr. globose. **l.S.** 5. *Woods and hedges.* ✓

5. **domestica.** L Fr.-stalks solitary or in pairs (downy; young branches smooth, KOCH). L. ovato-lanceolate. No thorns. Fl. somewhat before L. Fr. oval. **s.T.** 5. *Woods and hedges.*

6. **cerasifera.** Ehrh Fr.-stalks solitary (smooth, young branches smooth, KOCH). L. elliptic. Fr. *red*, globose, pendulous. **T.** 4, 5. *Cult. in* Ger. and Fr.

7. **Cocumilia.** Everywhere hairless. Fr.-stalks in pairs. L. obovate, acuminate at each end, with glandular crenatures. Fr. *yellow*, ovato-oblong, acute, the point somewhat recurved. **s.S.** 4. *Woods.* Calabria.

8. **prostrata.** "Stem much branched, procumbent. L. ovato-elliptic, serrulate, tomentose beneath. Fl. usually in pairs. Stalks very short. Tube of Cal. cylindrical. Drupe ovoideo-lenticular, hairy on the suture-like margin. **s.S.** 5. *High.* Monte Oliena, Sard." BERT.

9. **humilis.** Host "Stem much branched, pro-

cumbent. L. ovate, sharply serrulate, hairless. Fl. usually solitary, nearly sessile. Tube of Cal. campanulate. Drupe ovoid, small, hairless. **s.S.** 6, 7. *High.* Mte. Gennargentu, Sard.—Bert.

L 1 2 Koch ?

C. *Fruit without hairs or bloom. Nut subglobose. Young L. folded.* Cerasus.

i. *Flowers in umbels.*

✓ 10. **Avium.** L Umbels sessile. Scales of the Flowering-buds leafless. L. elliptic, acuminate, somewhat wrinkled, downy beneath. Stalk with two Glands. **T.** 4, 5. *Woods.*

✓ 11. **Cerasus.** L Umbel nearly sessile. Scales of the Flowering-buds leafy. L. elliptic, acuminate, smooth. Glands of Stalks obsolete. **l.S.** 4, 5. *Woods.*

β. semperflorens. Umbel on a stalk producing L. at the base, from which spring later axillary flowers. Rio Freddo, Abr.

✓ 12. **Chamæcerasus.** Jacq Umbel nearly sessile. Fruit-stalk exceeding L. Inner scales of Flowering-buds leafy. L. elliptic, smooth, shining. Stalk without glands. **low S.** 4–5. *Rocky hills.* Aus. Boh.

ii. *Flowers in Racemes.*

a. *L. deciduous.*

✓ 13. **Mahaleb.** L Rac. corymbose. L. roundish ovate, somewhat cordate, obtuse, serrate. **s.T.** 5, 6. *Stony woods.* e. Fr. w. G. It.

✓ 14. **Padus.** L Rac. cylindrical, pendulous. Lts. elliptic, somewhat rugose, with two glands on the stalk. **l.S.** 5. *Moist thickets and hedges.*

Two evergreen shrubs, P. lusitanica L *with Rac. exceeding L., and L. without glands, and* P. Laurocerasus L *with a Rac. falling short of L., and L. with 2–4 glands, are sometimes admitted as ornaments of public walks.*

Tribe II. *SPIRÆÆ.*

205. SPIRÆA. L

A. *Shrubs with simple L., and no Stipules.*

1. **ulmifolia.** Scop L. ovate, acute, pubescent beneath. Branches anguloso-striate. Corymbs simple, terminal. **s.S.** 5, 6. *Rocky.* Idria. Wochein. Görtz in Carniola.

2. **chamædryfolia.** L L. obovate or oblong, attenuate, ciliate. Branches terete, smooth. Corymb simple, terminal. **s.S.** 5, 6. *Hills.* Carniola.

3. **decumbens.** Koch L. obovate or oblong, attenuate, hairless. Branches terete, smooth. Corymbs terminal, compressed. **s.S.** 5, 6. *Mountains.* Carniola.

4. **hypericifolia.** L L. obovato-oblong, 3–4-nerved. Nerves pinnate. Inflorescence in sessile umbels or corymbs. **s.S.** 6, 7. *Mountain woods. Perhaps not indigenous.*

α. L. quite entire, hairless. Berri.

β. L. crenulate at the top, and somewhat downy. Cevennes.

5. **salicifolia.** L L. oblongo-lanceolate. Rac. united into a crowded panicle. **s.S.** 7. *Moist thickets.* Wales. Cev. Boh. Carinthia. Carn. ✓

6. **flabellata.** "Erect. Lower L. obovato-flabellate, elliptic, 3-lobed: the middle Lobes larger and toothed; upper obovato-lanceolate, entire and tridentate. Corymbs lateral, nearly sessile. **S.** 5, 6. Spoleto. Aquila."—Bert.

B. *Herbs with pinnate L.*

7. **Aruncus.** L L. tripinnate. No Stipules. **p.** 6, 7. *Woods.* m. and s. Eur. ✓

8. **Ulmaria.** L L. interruptedly pinnate. Stip. attached to stalk. Lateral Lts. ovate, undivided; the terminal larger, 3–5-lobed. Caps. hairless, twisted. **p.** 6, 7. *Moist.* ✓

9. **Filipendula.** L L. interruptedly pinnate. Lts. oblong, pinnatifido-incise. Lobes serrate. Carpels erect, hairy. **p.** 6. *Pastures.* ✓

Tribe III. *DRYADEÆ.*

206. DRYAS. L

1. **octopetala.** L L. crenato-serrate, obtuse. *Stalks with small, linear, fringed scales.* Sepals three or four times as long as broad. **p.** 7, 8. *Mountain pastures.* ✓

β. pilosa, Bab. L.-stalks without scales.

The shape of the Sepals varies in both these forms.

2. **depressa.** Bab L. crenato-serrate, obtuse. Stalks with small, linear, fringed scales. Base of Cal. truncate, nearly flat. Divisions twice as long as broad. **p.** 6. 7. *Calcareous mountains.* Ben Bulben, Sligo.—Bab.

207. GEUM. L

A. *Styles geniculate.*

1. **urbanum.** L Cal. of Fruit reflexed. Carpophore 0. Upper joint of Awn about a quarter as long as lower, smooth, except sometimes a few hairs at the base. Pet. obovate. Fl. erect. Stem-L. ternate. Stip. large, roundish, incise. **p.** 7, 8. *Moist hedges.* ✓

2. **intermedium.** Ehrh Cal. of Fr. spreading. Carpophore 0. Upper Joint of Awn about half as long as lower; the lower part covered with long hairs. Pet. round, on a short wedge-shaped claw. *Fl. often nodding.* **p.** 5, 6. *Mountain thickets, occ. Koch describes the upper joint of the Awn as only one-fourth of the length of the lower.*

3. **pyrenaicum.** Wild "Upper Joint of Awn hairy, as long as the lower. Plant hairy. Stems erect, nearly simple, 1–4-flowered. L. interruptedly pinnate. Lower Lts. ovate, dentate, very small; terminal very large, cordato-reniform, biserrate. Stip. ovate, obtusely dentate. Fl. nodding. Pet. obcordato-subrotund, on a very short claw, exceeding calyx. Head of Fr. depressedly spherical. Styles deflexed, rigid, as long as the very hairy carpels. **p.** Pyr."—DC. "Pet. equal to calyx. Upper Joint of Awn half as long as lower. **p.** 6, 7. *Moist meadows.* Alps. Sud."—Koch, *under* G. inclinatum, Schleich *which seems to be the same thing.*
has styles twice as long & filaments from base to end

4. **sylvaticum.** Pourr Cal. of Fr. erect. Carpophore 0. Upper Joint of Awn smooth, nearly equal to lower. Pet. obcordate. Ultimate Lt. of root-L. very large. Stem-L. small. Stip. lanceolate, somewhat dentate. 5, 6. *Woods.* s. Fr.

5. **thomasianum.** Ser "Lobes of Cal. ovate, short. Pet. obovate, hardly exceeding calyx. Stem erect, 1–3-flowered. Lts. of root-L. nearly equal, obovate. Stem-L. 3-nerved. Stip. ovate, somewhat doubly serrate. Mont Louis and Fenestres in e. Pyr."—DC. is in [illegible] de Schlecht

6. **rivale.** L Cal. of Fr. erect. Carpophore nearly as long as calyx. Upper Joint of Awn as long as lower, feathered. Stem-L. ternate. Stip. ovate. **p.** 5, 6. *Mountain meadows.*

B. *Style not jointed. Stem 1-flowered.*

7. **montanum.** L Runners 0. Terminal Lt. very large. Stem-L. undivided. **p.** 6–8. *Mountain pastures.* Alps. Apenn.

8. **reptans.** L Runners prostrate. Terminal Lt. not much larger than the others. Stem-L. 3-lobed. **p.** 7, 8. *High rocky.* Alps.

9. **micropetalum.** "Hirsute. Stems numerous, decumbent, tufted. Lower-L. pinnatolyrate. Lts. oblong, acutely inciso-dentate. Pet. roundish, equalling half calyx. Awns hairy. **p.** 6, 7. Between Muro and Laviano in Lucania."—Bert.

208. RUBUS L

In this Genus, and in *Rosa*, the species run so much into one another, that it seems impossible to draw a clear and definite line between two species, in almost any part of the series; and yet, the various forms under which we meet with them differ so widely as to prevent us from uniting them all under one head. I have endeavoured in both genera to characterize the most remarkable forms, without attending to all the intermediate gradations; and I recommend the student to begin by making himself master of these prominent forms, and rejecting all specimens which he cannot refer to one or other of them. When his eye is become familiarized to these, he may investigate the subject more minutely, and with a better chance of success than if he had at first perplexed himself with their endless varieties; and if he can hit upon more precise and definite characters to separate the species, he will do an essential service to the science.

The principal difficulties in this Genus occur in the tribe which has a tendency to produce digitate L. These are not always produced; but the student will soon find it easy to distinguish the plants which belong to this division. One mode of growth is common to all. The Root sends out a strong shoot, which the next year produces flowering and other branches, and, fixing itself in the ground, not unfrequently takes new root. When this is done, the L. near to the new root begin to turn back. The description of the Stem and L. is taken from the middle of a strong healthy shoot of the year, and the shape of the Lt. from that of the middle one. Where any other part of the plant is alluded to, it is distinctly mentioned.

A. Herbaceous. Sp. 1–3.
B. Shrubby. L. pinnate. Sp. 4.
C. Shrubby. L. digitate.
  i. Stem erect, not rooting. Sp. 5, 6.
  ii. Stem erect. Branches descending, and sometimes rooting. Sp. 7.
  iii. Stem arching or decumbent, without setæ.
    a. Cal. adpressed on Fr. Sp. 8, 9.
    b. Cal. of Fr. spreading or deflexed.
      * Lower Lts. overlapping. Sp. 10–14.
      ** Lts. 5, not overlapping.
        † Pr. on angles of stem. Sp. 15–20.
        †† Pr. scattered. Sp. 21–23.
      *** Lts. 3. Sp. 24, 25.
  iv. Stem arching or decumbent, furnished with setæ.

a. Cal. of Fr. reflexed.

* Pr. on angles of stem. Sp. 26–31.

** Pr. scattered. Sp. 32–41.

b. Cal. of Fr. spreading or erect. Sp. 42–44.

Uncertain. Sp. 45.

A. *Herbaceous.*

✓ 1. **Chamæmorus.** L L. simple, lobed, plaited. Stem 1-flowered, without prickles. **p.** 6. *Peaty hills.* Br. n. G.

✓ 2. **arcticus.** L Lts. 3. Stem 1–3-flowered, without prickles or runners. **p.** 5, 6. *High stony moors.* Sc. ?

✓ 3. **saxatilis.** L Lts. 3. Stem few-flowered, somewhat prickly, with long herbaceous runners. **p.** 6. *Calc. mountains.*

B. *Shrubby. L. never digitate.*

✓ 4. **idæus.** L Stems nearly erect, round, downy and prickly. L. pinnate, of 3 or 5 Lts., white beneath. **s.S.** 5, 6. *Thickets.*

C. *Shrubby. L. digitate.*

i. *Stem erect, or nearly so. Prickles small, confined to angles of stem.*

5. **suberectus.** Anders Stem angular. Fully developed L. pinnato-digitate. Lts. flexible; lowermost pair nearly sessile. Cal. of Fr. reflexed. **S.** 6–8. *Boggy thickets.* n. Wales. Sc.

6. **plicatus.** W & N Stem angular. Pr. nearly straight. Lts. plaited; outer somewhat stalked. Pan. a nearly simple corymb. **s.S.** 7, 8. *Sandy or stony.* n. and m. Eur.

β. *fissus.* Middle Lt. sometimes divided into three.

thyrsideus

ii. *Stem nearly erect. Branches descending, and often rooting.*

7. **nitidus.** W & N - Weihe & Nees "Stem angular, shining, smooth. Pr. nearly straight, directed downwards. Lts. 5, shining above, green and pubescent beneath. Lower pair stalked, and not overlapping the intermediate pair. Pan. compound, leafy. Rachis polished. **S.** 7, 8. *Hedges and thickets.*"—Bab.

iii. *Stem procumbent or arched, and returning to ground if not supported. Without setæ.*

a. *Calyx of Fruit adpressed.*

8. **Salteri.** Bab "Stem procumbent, somewhat hairy. Pr. straight, directed downwards. Lts. 5, hairy above, downy beneath. Lower pair shortly stalked, not overlapping. Pan. narrow. **S.** 7, 8. I. of Wight."—Bab.

9. **tenuis.** Salter "Stem procumbent, terete, hairless. Pr. deflexed, equal, stout. Lts. usually 3, nearly smooth above, green and downy beneath. Pan. decompound. Fr. of a few large grains. *Resembles* R. cæsius. **S.** 7, 8. s. Eng."—Bab.

b. *Calyx of Fruit spreading or reflexed.*

* *Outer Lts. overlapping the intermediate.*

10. **fastigiatus.** W & N "Stem decurved or procumbent, angular, hairless. Pr. few, declining, on the angles of the stem. Lts. 5, flat. Pan. nearly simple, leafy, corymbose at the end. **S.** 8, 9. *Thick woods.* Dumfries-shire."—Bab., *who places this with the erect species.*

11. **affinis.** W & N Stem angular, hairless. Pr. on the angles. Lts. 5, not hoary; the outer nearly sessile. Pan. lax, compound, with cymose branches. **s.S.** 7, 8. *Heaths and thickets.* n. and m. Eur.

12. **Grabowskii.** Weihe "Stem arched, angular, hairless. Pr. deflexed from a dilated base. Lts. 5, cordate, abruptly cuspidate, hairless and dull above, downy and grey beneath. Pan. somewhat cylindrical, leafy at base. **S.** 8. Leicestershire."—Bab.

13. **corylifolius.** Sm Stem nearly round. Pr. numerous, conical, straight, scattered. Lts. 5, flat, softly hairy beneath. Sepals of Fr. reflexed. **S.** 7, 8. *Hedges and thickets.*

14. **Balfourianus.** Bab Stem terete. Pr. slender, straight, scattered. Lts. 5, soft and paler beneath. Pan. corymbose. Bracts leaf-like, trifid. Sepals setose, erect, or clasping the hemispherical fruit. **S.** 8. near Rugby.

** *Lts. 5, not overlapping.*

† *Prickles on angles of Stem.*

15. **cordifolius.** W & N Stem nearly hairless. Pr. all nearly alike. Lts. coriaceous, cordato-orbicular, green above, hoary beneath; outer stalked. Pan. very compound. **S.** 7, 8, *Hedges and thickets.*

β. *rhamnifolius.* Lts. ovate.

16. **discolor** W & N (*fruticosus of* Smith). Stem clothed with fine close hairs. Lts. 5, subrotund, with a close, white, dull tomentum beneath. Margin deflexed. **S.** 7, 8. *Hedges and thickets.*

β. *argenteus.* Pr. crowded.

R. præcox *of* Bert. *is probably a var. of this.*

17. **leucostachys.** Sm Stem clothed with

long spreading hairs. Lts. 5, roundish, flat, covered beneath with pale, shaggy, and somewhat glittering hairs. **S.** 7, 8. *Thickets.* n. Eur. *I include with this* R. pubescens *and* R. vestitus *of W. and N.*

WvN

18. **carpinifolius.** Stem hairy, at first erect. Prickles strong, curved. Lts. 5, ovate, acuminate, green and downy beneath. Pan. nearly cylindrical; the branches short and few-flowered. **S.** 7, 8. *Hedges and thickets.* n. Eur. *occ.* [According to Dr. Bell Salter, the mode of growth is like that of *R. nitidus*; and Babington assents to this; so that its place in the arrangement is doubtful.]

WvN

19. **sylvaticus.** "Stem hairy, always loose and straggling. Pr. numerous, straight. Lts. 5, green, soft, and somewhat glittering beneath. Pan. compressed, leafy. Branches short. **S.** 7, 8. *Occ.*"—Bab.

R. Colemanni WvN

20. **macrophyllus.** Stem hairy, diffuse. Pr. few, small, and straight. Lts. 5, elliptico-oblong, thin, pale green and downy beneath. Pan. corymbose. Branches ascending. **S.** 7, 8. *Woods.* n. Eur. *Includes* R. Schlechtendalii, *W. and N.*

†† *Prickles scattered, unequal. Stem hairy.*

Bab

21. **leightonianus.** "Stem somewhat angular. Pr. straight, numerous, subulate, on a dilated hairy base. Lts. 3 or 5, pale green and hairy beneath, doubly apiculato-dentate. Pan. leafy below, with short, few-flowered, densely hairy and setose, divaricate branches. **S.** 7, 8. Eng. *occ.*"—Bab., *who insists much on the peculiar toothing of the L.*

B. Salter

22. **Borreri.** "Stem procumbent. Pr. numerous, unequal, long, slender, deflexed. Lts. 5, of the same colour on both sides, broadly obovato-lanceolate. Pan. corymbose; the lower branches long and decompound. Cal. of hemispherical Fr. erecto-patent. **S.** 6. Eng. *occ.*"—Bab.

23. **villicaulis.** Stem closely covered with spreading hairs. Pr. straight, crowded. Lts. 5, elliptico-ovate, hoary and shaggy and somewhat glittering beneath; all stalked. **S.** 7. *Thickets.* Sil., &c. *Differs from* sylvaticus *in the scattered prickles, from* leightonianus *in the toothing of the L., and from* Borreri *in the fruit.*

*** *Leaflets* 3.

W

24. **Sprengelii.** Pan. with a few long, spreading, villous, few-flowered branches. Lts. 3, ovate, acute, green beneath. **S.** 7. *Woods and thickets.* Minden, Ger.

25. **linkianus.** "Stem nearly erect, densely villous. Pr. hooked. Lts. all stalked, hoary beneath. Pan. simple. **S.** 6. *Thickets near Palermo.*"—Guss.

iv. *Stems arched or decumbent, furnished with setæ.*

a. *Calyx of Fruit reflexed.*

* *Prickles on angles of stem.*

B. Sal

26. **Babingtonii.** "Stem sulcate, hairless? Pr. stout and short. Setæ and Aciculi numerous. Lts. mostly 3, crenato-dentato-mucronate, downy and pale green beneath. Pan. very compound, *often more than two feet long.* **S.** 7. Selborne.

"*β. Bloxamii.* Stem angular. Pr. small. Branches of Pan. short, few-flowered. Warwickshire."—Bab.

W

27. **Lingua.** Stem somewhat angular. Pr. nearly straight. Aciculi, setæ, and hairs few and short. Lts. 3 or 5, nearly smooth above, hairy beneath. Pan. lax. Branches very long, mostly 1-flowered. Floral L. large and simple. **S.** 7, 8. Devon. Jersey. Ger.

28. **scaber.** Stem round, somewhat hairy. Pr. curved. Lts. 3 or 5, unequally and finely serrato-obovate, pale and hairy beneath. Pan. compound. Cal. with a leafy termination. **S.** Minden.

W

29. **rudis.** Stem hairy, slightly furrowed. Pr. stout, deflexed. Lts. 5, ovate, doubly and coarsely serrate, dull above, soft and white beneath. Pan. much branched, long, leafy, naked at the end. Sepals lanceolate, reflexed, mostly with a leaf-like point. **S.** 7, 8. *Hedges and thickets.* Eng. Ger.

W

30. **Radula.** Stem angular. Pr. slender, from a thick base. Lts. 5, unequally and finely serrate. Pan. long, leafy, naked at the end, with short corymbose branches. Sepals reflexed, without a leaf-like point. **S.** 7, 8. *Hedges and thickets. occ.*

31. **fuscus.** Stem hairy and glandular. Lts. 5, cordato-ovate, paler and downy beneath. Separate Fl.-stalks short and prickly. **S.** 7–9. R. foliosus *and* pallidus, *W. and N., probably belong to this.*

pilostachys

** *Prickles scattered.*

WvN

32. **rosaceus.** Stem somewhat angular. Pr. unequal, mixed with glands and setæ. Lts. 3, cordato-subrotund, green beneath. Pan.

leafy. Branches corymbose. Cal. with a leaf-like termination. **S.** 7. lower Rhine.

33. **Schleicheri.** W Stem nearly terete. Pr. unequal, mixed with hairs, glands, and setæ. Lts. 3, obovate, acuminate, green and softly downy beneath. Inflorescence racemose. **S.** 7, 8. Ger. Eng.?

34. **glandulosus** (*Bellardi*, W. and N.). Stem round. Pr. small, slender, mixed with hairs, glands, and setæ. Lts. 3 or 5, elliptic, pale green and downy beneath. Pan. compound. **S.** 7, 8. Ger. Eng. *Cal. of Fr. sometimes reflexed, when there seems little to distinguish this species from* R. Güntheri; *sometimes erect, when it is separated from* R. cæsius *by the want of bloom on the stem.*

35. **humifusus.** W "Stem procumbent, hairy, setose. Pr. numerous, very slender and unequal, declining. Lts. 3 or 5, cordato-ovate. Pan. branched, leafy below. Lower branches 3–4-flowered; upper 1-flowered. *Stem, flowering-shoot, and Fl.- and L.-stalks beautifully clothed with long, slender prickles, purple at base, and passing insensibly into long, slender setæ.* **S.** 7, 8. Perthshire."—Bab.

36. **Güntheri.** W Stem somewhat angular. Pr. numerous, unequal, some of them stout though short, mixed with hairs and glands. Lts. ovate, acuminate, green beneath. Pan. thyrsoid, compound. **S.** 8. Ger. Eng. Sw.

37. **incanescens.** "Stem angular, hirsute in the upper part. Pr. on a much dilated base. Lts. 3, smooth above, tomentose beneath. Pan. compound, pyramidal, divaricate, very villous, hispido-glandulose, and armed with numerous hooked prickles. Pet. oblong. **S.** 5. Sarzana."—Bert.

[illegible]

38. **tomentosus.** Bork Stem angular. Pr. hooked. Lts. 3 or 5, elliptic-oblong, incise, hoary above, white beneath. Pan. compound, elongated. **S.** 6–8. *Calc. hills.* m. and s. Eur. *Bertoloni says that there are no setæ on this plant. I find them almost always present on the barren shoots, and there is generally a great number of small prickles.*

39. **fusco-ater.** W "Stem decumbent, angular, slightly hairy. Pr. numerous, unequal, straight. Lts. 5, dull above, soft, shining, and silky beneath, cordato-ovate, acuminate, wavy; lower pair overlapping the intermediate. Pan. with corymbose branches, leafy below. **S.** 7, 8. Eng. *occ.*"—Bab.

40. **Kœhleri.** W Pr., Aciculi, and Setæ very numerous and very unequal, straight, horizontal. Lts. 5, obovate, acuminate, dull above, hairy, soft, and shining beneath; all stalked, the lower not overlapping. Pan. decompound, naked at summit. **S.** 7, 8. *Hedges and thickets. Including* R. infestus.

41. **Wahlbergii.** Arrh "Stem obtusely angular, with few or no hairs or setæ. Pr. numerous, very unequal. Lts. 5, broadly ovate; those on the flowering-shoot cordate, broad below. Pan. long, leafy, prickly. Pet. obovate, *often much like* R. corylifolius. **S.** 8. s. of Eng."—Bab.

b. *Calyx of Fruit erect.*

42. **hirtus.** WK Stem round, very hairy. Pr. crowded, long and straight. Lts. 5, cordate, acuminate, glittering beneath. Branches of Pan. corymbose. **S.** e. Ger.

43. **nemorosus.** Hayne Stem angular, hairy. Pr. numerous, straight, deflexed. Lts. 5, paler but dull beneath; the outer sessile. *Fr. black.* **S.** 6–8. *Thickets.* Shropshire. Ger.

44. **cæsius.** L Stem prostrate, nearly round, pruinose. Pr. small, slender, deflexed. Lts. usually 3, paler and downy beneath; outer sessile. **s.S.** 6, 7. *Bushy banks.*

The following I do not know where to place:—

45. **velutinus.** "Stem angular, furrowed. Pr. strong, nearly straight. Lts. usually 3, hoary beneath; outer sessile. Claw of the Pet. as long as calyx! **s.S.** Boh."—Vest, *in* Bluff *and* Fingerhut.

209. FRAGARIA. L

1. **vesca.** L With Runners. Cal. of Fr. spreading or reflexed. Hairs of L.-stalks very spreading; of Fr.-stalk adpressed. Fl. somewhat cymose. Fr. hanging. **p.** 5, 6. *Woody hills.*

2. **calycina.** Lois "Cal. nearly as long as corolla. Fl. in a corymb. Stalks longer than scape. Lts. sessile, cuneato-subrotund. **p.** 5. *Woods.* Bois des Fenches near Chantilly."—Lois. is 3 Gr. G.

3. **collina.** Ehrh With Runners. Cal. of Fr. adpressed. Hairs of L.-stalks very spreading; of Fr.-stalks adpressed. **p.** 5, 6. *Uncult. hills.* Fr. Ger.

4. **elatior.** Ehrh With Runners. Somewhat diœcious. Cal. of Fr. spreading or reflexed. Hairs of L. and Fl.-stalks very spreading or deflected. **p.** 6, 7. *Woody hills.* Eng. Fr. G.

5. **hagenbachiana.** Lang "Cal. of Fr. adpressed. Stamens equalling the germens. Hairs of Stem and L.-stalk horizontal; of the lateral Fr.-stalks erect. L. on long stalks. Stalk of middle Lt. one-fourth as long as Lt. **p.** 5, 6. *Stony hills.* Brisgau."—KOCH. Fr. *I take it on the authority of Koch, that this is the* F. Majaufea *of DC., and also that it is different from* F. collina. is 3 gr-g.

6. **breslingea.** Duch "Lts. plicate, somewhat coriaceous, greener; hairs longer and firmer. Pet. narrower, yellowish-white. Sepals longer, erecto-adpressed after flowering, adhering to receptacle. Seeds more turgid. **p.** Fr."—DC. *The comparatives probably refer to* F. Majaufea, *which precedes this in the 'Prodromus.'* is 3 Gr-g

210. COMARUM. L

1. **palustre.** L L. quinato-pinnate. *Fl. dark purple.* **p.** 7. *Peaty.* n. and m. Eur.

211. POTENTILLA. L

A. L. pinnate. Plant shrubby. Sp. 1.

B. L. pinnate. Plant herbaceous. Sp. 2–6.

C. L. digitate. Fl. yellow. Seeds hairless.

- **i.** L. ternato-digitate. Sp. 7–14.
- **ii.** Root-L. quinato-digitate. Stem-L. generally ternate or simple, few.
  - **a.** Fl. solitary. Sp. 15–17.
  - **b.** Fl. panicled. Sp. 18–24.
- **iii.** Stem-L. quinate, numerous. Lts. of root-L. often 7.
  - **a.** Seeds not bordered. Sp. 25–32.
  - **b.** Seeds bordered. Sp. 33–35.

D. L. digitate. Fl. white. Seeds with hairs.

- **i.** Fl. clustered on an ascending stem. Sp. 36–43.
- **ii.** Fl. few and scattered. Stem weak, prostrate, straggling. Sp. 44–49.

A. *Shrubby. L. pinnate. Fl. yellow.*

1. **fruticosa.** L Lts. about 5, nearly equal, entire. Bracteoles lanceolate. **s.S.** 7, 8. *Rocky banks.* Teesdale. Pyr. Tende.

B. *Herbaceous. L. pinnate. Lowermost Lts. smaller than the upper.*

2. **anserina.** L L. interruptedly pinnate. Lts. inciso-serrate, all sessile. Fl. solitary, yellow. Shoots creeping. **p.** 5, 7. *Moist.*

3. **multifida.** L L. subrotund. Lts. few, deeply pinnatifid. Segm. linear. Fl. corymbose, *yellow.* Outer Segm. of Cal. oblong. **p.** 7, 8. *Snowy mountains.* Alps. s. of Valais. *very rare.*

4. **pensylvanica.** Erect. Lts. oblongo-cuneate, inciso-dentate, all sessile. Stip. larger than lower Lt. Fl. panicled, yellow. Outer Segm. of Cal. ovato-linear, exceeding inner. **p.** 6, 7. *Naturalized in* Bois de Boulogne.

5. **rupestris.** L Lower L. pinnate; upper ternate. Lts. ovato-subrotund, inciso-serrate, sessile. Stip. smaller than lower Lt. Fl. panicled, *white!* Outer Segm. of Cal. lanceolate, falls short of inner. **p.** 5–7. *Stony mountains.* G. Sw. Fr. Tusc.

6. **supina.** L Lts. inciso-dentate; uppermost confluent; lowest somewhat stalked. No barren tufts of L.! Fl. solitary, yellow. Fr.-stalks recurved. **a.** 6–9. *Sandy overfl.* Fr. G. Sw. n. It. *rare.*

C. *Herbaceous. L. digitate. Seeds hairless. Fl. yellow.*

i. *L. ternato-digitate.*

7. **norvegica.** L Annual, hirsute. Stem dichotomous. Fl. numerous, somewhat corymbose; the lower axillary. **a.** or **b.** 6, 7. *Moist sandy.* n. G.

β. ruthenica. **p.** Root-L. quinato-pinnate.

8. **nivea.** L Stem erect, few-flowered, nearly simple. L. with somewhat silky hairs above, and a white, dull, and entangled pubescence beneath. Margin flat. **p.** 6. *Very high grass.* Alps. *rare.*

9. **grandiflora.** L Stem ascending, lax, about 5-flowered. Lts. with spreading hairs on both sides, deeply serrate. Pet. obcordate, far exceeding calyx. Seeds wrinkled. **p.** 7, 8. *Very high pastures.* Alps.

β. pyrenaica. A few of the root-L. quinate. Pyr.

10. **grammopetala.** "Softly villous. Stem erect. Lts. hairy on both sides, serrate. Corymb compound. Pet. obversely lanceolato-linear, obtuse, pale. Seeds smooth. **p.** 7, 8. It. Alps."—BERT. *Perhaps a hybrid between* P. caulescens *and some yellow-flowered* Potentilla."—REICH.

11. **frigida.** Vill. Stem short, tufted, 1–2-flowered. Lts. very villous on both sides, inciso-dentate. Teeth obtuse, (overlapping each other, KOCH.) *Pet. generally not exceeding calyx.* **p.** 7, 8. *Snowy.* Alps. *rare.*

α. Cal. Segments somewhat acute. Seeds even.—DC.

β. glacialis. Cal. Segments somewhat obtuse. Seeds somewhat rugose.—DC.

12. **subacaulis.** L Stems tufted. Pan. few-flowered. Lts. hoary on both sides with stellate! pubescence, strongly veined. Pet. shorter than calyx. (Seeds rugose, DC.) **p.** 6 (or 5). *High calc. stony.* Dau. Prov. Pdm. Trieste. Monte de' Fiori.

13. **minima.** Hall Stem (ascending, usually 1-flowered, Koch), (diffuse, filiform, DC.), (entirely prostrate, Guss.) Lts. hairy on the margin and on the veins beneath, but without hairs on the upper surface; (ending in about 9 equal teeth, Koch.) **p.** 7, 8. *Very high pastures and rocks.* Alps.

α. Cal. Segments unequal, obtuse.

β. brauniana. Cal. Segments nearly equal, acute.

14. **Tormentilla.** Nestl Stem procumbent or ascending, dichotomous, not rooting. Stem-leaves nearly sessile. Stip. large, incise, leaf-like. Pet. 4. **p.** 5, 6. *Sandy.*

ii. *Root-L. quinato-digitate. Stem-L. ternate, few.*

a. *Flowers solitary.*

15. **procumbens.** Sib (*Tormentilla reptans.*) Stems usually flagelliform, creeping. L. generally solitary. Lts. entire below the middle. Serratures acute. Pet. 4. **p.** 6, 7. *Sandy. occ.*

16. **mixta.** Nolte Stem flagelliform, prostrate, branched towards the top. Lts. serrate below the middle. Serratures somewhat obtuse. Pet. generally 4. **p.** *Pastures.* Holsace.

17. **reptans.** L Stems flagelliform, creeping. L. several together. Lts. serrate almost from the base. Serratures somewhat obtuse. Pet. generally 5. **p.** 6–8. *Pastures and uncultivated.*

b. *Flowers panicled.*

18. **cinerea.** Chaix Hoary, cottony. Pubescence partly stellate. Shoots prostrate, often creeping. Flowering-stems ascending. Lts. obovate. Serratures about 9; the middle smallest. Lower Stip. with a linear tail. **p.** *Open sandy or rocky. rare.* G. Sw.

19. **verna.** L Shoots prostrate. Flowering-stems ascending, hirsute. All the hairs erecto-patulous. Lts. oblongo-obovate, with spreading hairs beneath and on the margin above. Serratures about 9; the middle smallest. Lower Stip. with a linear tail. **p.** 4, 5. *Dry open.* m. Eur.

20. **Lindackeri.** "Stem filiform, procumbent. Lts. cuneiform, silky beneath. Teeth large, oblong, rounded. Pet. exceeding calyx. Boh."—DC. *Not in Koch; it is probably a var. of* P. verna.

21. **aurea.** L Shoots prostrate, sometimes creeping. Flowering-stem arched. Hairs erect. Lts. oblong, with a silky fringe on the margin and on the veins beneath. Serratures about 7, acute; the middle smallest. Stip. not prolonged. **p.** 7, 8. *Grassy mountains.* Alps. Silesia. Pyrenaica.

22. **alpestris.** Hall Shoots prostrate, sometimes creeping. Stems ascending, downy. Lts. obovato-cuneate, with spreading hairs on the margin and on the veins beneath. Teeth large, porrect, about 7; ultimate nearly equal. Stip. not prolonged. **p.** 6–8. *Mountains.* Tyrol. Styria. Salzburg. Scotl. Teesdale. Vosges.

β. sabauda. Stem firmer. L. rounder, their Teeth broader.

23. **opaca.** L Shoots prostrate, sometimes creeping. Stems ascending, and, as well as the L.-stalks, covered with long horizontal hairs. Lts. oblongo-cuneate. Serratures large, the middle smallest. **p.** 5, 6. *Hill thickets and rocky places. occ.* G. Alps.

24. **ambigua.** Gaud Stems ascending, pubescent. Lts. somewhat digitato-incise, silky on veins beneath. Teeth linear, about 7, nearly equal. Stip. ovate. **p.** 7. *Mountains above* Zermatten in the Vallais.

iii. *Stem-L. quinate, numerous. Lts. of Root-L.* 5, 7.

a. *Seeds not bordered.*

25. **Calabra.** "Stems decumbent or ascending. Lts. cuneate, subrotundo-flabellate, many-cleft, densely tomentose and white beneath, less so above. Margin revolute. Segments of Cal. obtuse. Pet. obovate, two or three times as long as calyx. **p.** 5, 6. Cal. Sic."—Bert.

26. **argentea.** L Stems ascending, tomentose, corymbose. Lts. 5, obovate, incise, narrowed and entire at base, tomentose beneath. Margin revolute. Fl.-stalks straight after flowering. **p.** 6, 7. *Open gravelly.*

27. **collina.** Wib Stems decumbent, villoso-tomentose, diffusely panicled. Root-L. forming a central tuft. Lts. 5, obovato-cuneate, flat on the margin, acute. Stalk reflexed after flowering. **p.** 5. *Dry open hills.* Wertheim (Baden). Boh. Sil. *Very like* P. argentea.

28. **inclinata.** Vill Stem erect or ascending, villous and tomentose, corymbose. Lts. 5, oblongo-lanceolate, inciso-serrate, ciliate and furnished with scattered hairs and a fine hoary tomentum beneath. Seeds with a filiform margin. **p.** 5–7. *Dry open hills.* e. Ger. *rare in* Switzerland.

29. **patula.** Koch Stems erect or ascending, hairy, not tomentose. Hairs erect. Lts. lineari-cuneate, green on both sides, hirsute beneath on midrib. Teeth of stem-L. 5–7. **p.** 5. *Open hills.* Czeiz in Moravia and Leobschütz in Silesia.

30. **Dethomasii.** "Pubescence of the whole plant consisting of long, soft, grey, spreading hairs. Stem erect. Lts. oblongo-obovate, with numerous small teeth occupying nearly the whole margin. Pet. obcordate, two or three times as long as calyx. Seeds with a crested keel, covered with arching wrinkles. **p.** 6, 7. *Open hills.* Rome. K. of Naples." —Bert.

31. **intermedia.** L Stems spreading all round, dichotomously panicled from the middle, hairy, not tomentose. Hairs on Tubercles spreading, without glands. Root-L. tufted. Lts. 7, obovato-cuneate; of upper L. 3, oblongo-cuneate, green on both sides, hirsute beneath. Teeth 11–21, spreading, the middle smallest. **p.** 5, 6. *Rocky and gravelly.* w. Sw. Dau. Pyr.

32. **thuringiaca.** Bernh Stems spreading all round, dichotomously panicled from middle. Hairs on tubercles, spreading, without glands. L. green on both sides, hirsute beneath. Root L. tufted. Lts. 7. Serratures porrect, ovate, 19–25. Lts. of upper L. lineari-lanceolate. Serratures remote, inclining inwards. **p.** 5, 6. *Stony woods.* Thuringia. Vall.

delphinensis

b. *Seeds margined.*

33. **pilosa.** Willd "Stems erect, hirsute and also tomentose. Lts. 5, lanceolato-oblong, attenuate, coarsely serrate, with long hairs on both sides; those of lower L. obovato-oblong. Seeds wrinkled, bordered by a very narrow keel. **p.** 5, 6. *Open hills.* Thuringia. Colmar and near Hamburg."—Koch.

34. **recta.** L Stem erect. Longer hairs on tubercles; shorter glanduliferous. Lts. 5–7, oblong, cuneate at base, inciso-serrate. Seeds wrinkled. Margin wing-like, discoloured. **p.** 6, 7. *Stony.* s. Europe.

β. *obscura.* Pet. shorter than calyx. *pilosa*, Willd.

γ. *laciniosa.* Lts. pinnatifido-incise. Segments often serrate.

35. **hirta.** L Stem erect or ascending. Longer hairs on tubercles; shorter without glands. Lts. 5–7, inciso-serrate; of root-L. obovato-cuneate; of stem-L. linear. Seeds wrinkled. Margin wing-like. **p.** 7, 8. *Grass.* s. Eur. ✓

β. *angustifolia.* Lts. narrower. Stipules cloven.

γ. *pedata.* Lts. serrate almost to base.

[I follow Koch in separating these two species, but I do not find in the specimens which I have examined any clear distinction in the glands of the hairs.]

D. *Flowers white. L. digitate. Seeds hairy, at least at the base. Receptacle very hirsute.*

i. *Flowers panicled, on an ascending stem.*

36. **alchemilloides.** Lap Root fleshy. Stem nearly erect. Lts. of root-L. 5–7; of stem-L. 3, lobed. Lobes oblong, hardly denticulate, nearly smooth above, hoary and tomentose beneath. Segments of Cal. lanceolate. Seeds very hairy. **p.** 8, 9. *High rocks.* Pyr. ✓

37. **valderia.** All Densely tomentose. Crown of Root covered with silky scales. Corymb compact. Lts. 5–7, obovato-cuneiform, with many teeth, velvety on both sides. Segments of Cal. lanceolate, acute. Pet. obcordate, shorter than calyx. Filaments hairy. **p.** 7, 8. *High stony.* Piedmont.

38. **caulescens.** L Ascending. Fl. numerous. Lts. 5, nearly sessile, oblongo-lanceolate, cuneate at the base, acutely serrate at the top, somewhat villous and with silky cilia. Fil. hirsute. Seeds villous. **p.** 7, 8. *Fissures of rocks.* Alps. ✓

β. *nivalis.* Lap L. very sericeo-villous on both sides. Pyr. sp Gr & G. Gaud ✓

39. **petiolulata.** Nearly erect. Fl. numerous. Lts. 3–5, somewhat stalked, obovato-oblong, cuneate at base, acutely serrate half round, ciliate, otherwise nearly hairless. Fil. hirsute. Seeds villous. **p.** 7, 8. *Rocky, calc.* Chambéri. Saleuc. is 3 of Gr & G var ✓

40. **crassinervia.** Vill "Pubescent. Stem ascending. Corymb compressed. Lts. 3–5, obovate, viscid, with strong veins and numerous, small, obtuse teeth. Fil. smooth. Seeds villous. **p.** 7, 8. *Rocks.* Sard. Monti Coscione and Grosso in Cors."—Bert.

41. **clusiana.** Mur Ascending. Fl. 3. Lts. 3–5, oblongo-lanceolate, cuneate at base, villous ✓

beneath, with silky cilia and three porrect teeth. Fil. hairless. Seeds villous. **p.** 7, 8. *Fissures of high rocks.* Tyrol. Salzb. Styria. Austria.

✓ 42. **nitida.** L Stems tufted, 1–3-flowered. Lts. 3, silky on both sides, obovato-cuneiform, entire or with three terminal, acute, porrect teeth. Fil. smooth. **p.** 7, 8. *High calc. rocks.* Dau. Savoy. Tyrol. Carniola.

43. **tridentata.** L Ascending. Lts. 3, cuneate, with about 3 terminal teeth, smooth above, hairy beneath. Seeds downy. Fil. smooth. **p.** 5, 6. *Mountains.* Werron hill, Clova.

ii. *Stems weak and straggling. Flowers few.*

44. **apennina.** Stems filiform, with 1 L. and about 3 flowers. Lts. 3, silky on both sides; those of root-L. oval, obtuse, entire or tridentate at the top; of stem-L. linear, entire. Pet. with a long claw. Fil. smooth. Seeds wrinkled, bearded at top. **p.** 7, 8. *High calc. rocks.* Abruzzi.

✓ 45. **splendens.** Ram Lts. 3, rarely 5, obovate, silky beneath and on margin, all toothed at top. Stalks very hirsute. Fl. 2–4. Fil. smooth. Seeds hairy at the umbilicus. **p.** 4, 5. *Shade.* w. Fr. Fontainebleau. Thuringia. *Koch, in this species and the following, seems to make a difference between the* hilum *and the* umbilicus.

✓ 46. **alba.** L Ascending. Lts. of Root-L. 5, oblongo-lanceolate, attenuate at base, silky beneath and on margin. Serratures acute, connivent; the middle one narrower. Fil. hairless. Seeds hairless except on the hilum. **p.** 5, 6. *Woods. somewhat rare.* G. Dau. Prov. Switzerland.

47. **hybrida.** Wallr Stems procumbent, 2–4-flowered, equalling L. Lts. of root-L. 3–5, obovate, silky beneath, serrate half round. Serratures ovato-lanceolate; the terminal smallest. Stem-L. few, ternate. Carpels hairy on the umbilicus. **p.** 5. Thuringia. *Not in Koch.*
is 45 Koch

✓ 48. **Fragariastrum.** Stem procumbent, 2-flowered, equalling or exceeding L. Shoots creeping. All L. ternate. Lts. subrotundo-ovate, serrate more than half round, villous beneath, or silky when young. Seeds hairy at the umbilicus. **p.** 4, 5. *Thickets and grassy banks.* Stem-L. ternate. Divisions of Cal. unequal.

✓ 49. **micrantha.** Ramond Stems procumbent, 2-flowered, falling short of L. No shoots. Lts. of root-L. oval, serrate more than half round. Stem-L. simple. Seeds hairy at the umbilicus. **p.** 4, 5. *Stony thickets.* Styr. Sw. Vosges. (Divisions of Cal. nearly equal, Godron.)

The characters in this genus are by no means satisfactory, and it is probable the species here enumerated are not all distinct.

212. SIBBALDIA L

1. **procumbens.** L Lts. 3, cuneate, with 3 terminal teeth. Fl. corymbose. Pet. small, lanceolate. **p.** 7. *High.* Sc. Alps. Pyr. ✓

213. AGRIMONIA L

1. **Eupatoria** L Lts. ovato-oblong, crenato-dentate, the odd one stalked. (Bracts linear, Guss.) Furrows of Cal. deep and continued to base. Outer Spines spreading. **p.** 6, 7. *Uncult.* ✓

Miller
Wil

2. **odorata.** Lts. oblongo-lanceolate, crenato-dentate, glandular beneath; the odd one stalked. (Bracts lanceolate, Guss.) Furrows of Cal. slight, extending only to middle. Outer Spines refract. **p.** 6, 7. *Shade.* Sic. Nap. ✓

214. SPALLANZANIA Poll

1. **agrimonioides.** Pollin Root-L. interruptedly pinnate, on long stalks. Stem-L. ternate, on short stalks. **p.** 5, 6. *Rough woody hills.* Carniola. e. Alps of It. Lig. Umbria. Nebrodes. ✓

215. ALCHEMILLA. L

A. *Flowers sessile, axillary, alternate. Segments of Calyx very small.*

1. **arvensis** L L. stalked, tripartite, cuneate at base. Fl. crowded, axillary. **a.** 5–8. *Fields.* ✓

B. *Segments of Calyx nearly equal.*

2. **vulgaris.** L Root-L. divided to one-third of length. Lobes everywhere serrate. Fl. in a terminal corymb. **p.** 5–7. *Grassy hills.* ✓

3. **pubescens.** Bieb Root-L. divided to one-third of length. Lobes truncate, serrate only at top. Fl. in a terminal corymb. **p.** ~~6~~ 6, 7. *Very high pastures.* Tyrol. Carinthia.

4. **fissa.** pyrenaica Schlumm Root-L. divided to the middle. Lobes inciso-dentate at top; of upper L. deeply incise. Fl. in a terminal corymb. **p.** 7, 8. *Very high.* Alps. ✓

5. **conjuncta.** Bab Root L. peltato-palmate. Divisions 5–7, combined through one-third of their length, closely serrate at the end, white

and silky beneath. **p.** 6, 7. Clova mountains. Cumberland."—Bab.

✓ 6. **alpina.** L Root L. digitate. Lts. oblong, closely serrate at top, silky beneath. **p.** 6–8. *High rocky.*

✓ 7. **pentaphylla.** L. Root L. quinato-digitate. Lts. inciso-dentate at top. Teeth porrect, 4 to 6 in the three middle Lts. **p.** 7, 8. *Snowy.* Sw. Tyr.

Tribe IV. *SANGUISORBEÆ.*

216. SANGUISORBA. L

✓ 1. **officinalis** L Spikes ovate. Stamens 4, not exceeding calyx. **p.** 6, 7. *Hill pastures.*

β. *media.* Spikes cylindrical, smooth.

2. **dodecandra.** Morett Spikes cylindrical. Stamens 6–12, far exceeding calyx. **p.** 7, 8. Val d'Ambria in Valtelline. Mte. Barbelino in Bergamo.

✓ Magnolii

217. POTERIUM. L

A. *Shrubby. Fruit even, berry-like.*

1. **spinosum.** Spach Branches spinescent. Spikes oblong. L. nearly hairless. **s.S.** Bari. Cal. Sard.

B. *Herbaceous. Fruit hard, wrinkled or tubercled.*

2. **Sanguisorba.** L Stem angular. Lts. rounded, serrate. **p.** 6, 7. *Hilly pastures.*

3. **garganicum.** "Stem angular, hairy. Lts. of root-L. subrotundo-elliptic; of stem-L. oblongo-lanceolate; all deeply incise. Spikes globose. Fl. complete. **p.** *Dry fields.* Mte. Gargano."—Ten.

4. **polygamum.** Waldst Stem angular. Fr. with raised and toothed wrinkles and 4 winged angles! **p.** 7, 8. *Hills.* Laybach. Fiume.

Tribe V. *ROSEÆ.*

218. ROSA. L

A. Centifoliæ. Shoots setigerous. Disc thick. (Seeds sessile, Koch.) Segments of Cal. simple or nearly so. Sp. 1, 2.

B. Cinnamomeæ. Disc thin. Stip. enlarging towards the flower into capacious bracts. Sp. 3–5.

C. Blandæ. Stip. little or not at all enlarged. Prickles few and weak, or wanting. Setæ crowded on the radical shoots. Sp. 6–9.

D. Pimpinellifoliæ. Prickles unequal, numerous, some of them strong. Setæ few. Fr., except in *R. Wilsoni*, depressedly globose.

i. Lts. without glands. Serratures simple. Sp. 10–12.

ii. Lts. glandular beneath. Serratures double. Sp. 13–16.

E. Villosæ. Shoots not setigerous. Stip. persistent. Prickles nearly straight. Sp. 17–20.

F. Rubiginosæ. Prickles of the branches hooked. Styles free. L. glandular beneath, doubly serrate. Sp. 21–28.

G. Caninæ. Shoots not setigerous. Prickles hooked. L. not glandular on either surface. Sp. 29–34.

H. Systylæ. Styles exsert, united into a column. Sp. 35–37.

A. Centifoliæ.

1. **pumila.** "A low, erect shrub. Pr. slender. Lts. broad elliptic, doubly serrate, paler beneath, hairy and glandular on the midrib and veins. Tube of Cal. oblong, hispid. Segments pinnatifid. Style somewhat exsert. **s.S.** 5, 6. Italy. *Certainly distinct from* R. gallica."—Bert.

2. **gallica.** L "Prickles crowded, unequal, the larger somewhat falcate on a dilated base. Stip. lineari-oblong, flat, the free part diverging. Tube of Cal. subglobose. Segments pinnatifid, reflexed, deciduous. **s.S.** 6. *Fields and borders of woods.* G. *occ.*"—Koch. ✓

[One or both of these are found also in the s. of France. I give both descriptions, not being able to satisfy myself whether the German and Italian plants are of the same species. Koch does not notice the *R. pumila*, though a plant of Jacq., *Fl. Austr.* According to Bertoloni, the Fr. of *R. gallica* is 'glaber,' which is not the case in my German specimens.]

[illegible]

B. Cinnamomeæ.

3. **cinnamomea.** L Pr. straight, few, stipulary. Fr.-stalk terete, without setæ. Cal. of Fr. erect. Lts. oblong, downy beneath. Stip. of barren branches rolled in. Fr. (ovate, Hooker,) (globose, Koch and E. Bot.). **S.** 5, 6. *Thickets and moist banks.* s. G. Sil. s. Fr. *occ.* R. majalis, *of Pyrenees, is a variety of this.* ✓

? ✓ 4. **turbinata.** Ait " Pr. crowded, unequal, the larger somewhat falcate on a dilated base; none on the branches. Fr. elliptic, erect. Cal. somewhat divided, spreading, persistent. Lts. ovate, coarsely serrate. Stip. not rolled in. **s.S.** 6. *Thickets.* Mount Kahlenberg near Vienna."—Koch.

5. **Dicksoni.** Lind "Pr. scattered, slender, subulate. Fr.-stalk thickened upwards, setose. Lts. oval, hoary, coarsely and irregularly serrate, with a few glands beneath. Fr. ovato-urceolate. **S.** 6. Ireland?"—Mackay.

C. Blandæ.

6. **lucida.** Ehrh "Pr. straight, crowded, unequal, the larger subulate; the smaller setaceous, without glands. Lts. 7 or 9, oblongo-lanceolate, simply serrate, smooth and shining above. Stip. flat, the free part connivent. Fr. depresso-globose. Stalks erect. Cal. deciduous. **s.S.** *Sea-shore* near Rostock. *Banks* of Elbe near Hamburg."—Koch.

✓ 7. **alpina.** L Branches without prickles or setæ. Lts. 5–11, doubly serrate. Fr. drooping, more or less urceolate, *red.* Cal. persistent. **S.** 6, 7. *Mountains.* m. Europe.

8. **reversa.** Koch Branches with scattered prickles and setæ. Lts. 5–7. Stip. enlarged towards flower, canaliculato-complicate. Fr. drooping, ovate, *black.* Cal. persistent. **S.** 5. *Rocky hills.* Trieste.

9. **rubella.** Lind Branches densely setigerous. Lts. 7–11, naked, simply serrate. Fr. drooping, oblong or urceolate. (Fr. globose with a short neck, probably erect, Sm.) Cal. persistent. **s.S.** 5, 6. *Sandy shores.* n. e. Eur. s. e. Sc. *Rough hills.* Istria. Trieste. R. gentilis *of Koch seems to be the same species.*

D. Pimpinellifoliæ.

i. *Lts. without glands. Serratures simple.*

✓ 10. **spinosissima.** L Pr. crowded, mostly straight. Lts. small, 5–11, roundish. Segments of Cal. simple. Fr. dark. **s.S.** 5, 6. *Dry.*

11. **hibernica.** Sm Pr. and Setæ scattered, the larger falcate. Lts. 5–9, ovate, acute. Fr. somewhat urceolate, *blood-red.* Segments of Cal. somewhat pinnate. **S.** 6–11. Counties of Derry and Down.

12. **Wilsoni.** Bor Pr. crowded, straight. Setæ few. Segments of Cal. simple. Lts. hairy on both sides. Fr. elliptico-urceolate, *scarlet.* **s.S.** On a declivity by the Menai near Bangor.

ii. *Lts. doubly serrated, glandular beneath.*

13. **myriacantha.** DC Pr. straight, crowded. Lts. somewhat doubly serrate, rounded, not hairy beneath. **s.S.** 5, 6. Lyons. Montpellier.

v. 5. 10 tab

14. **involuta.** Sm Pr. straight, crowded. Lts. 5–9, elliptic, nearly hairless on upper surface, hairy and glandular beneath. **s.S.** Hebrides and w. Sc.

15. **Sabini.** Woods Pr. mostly straight. Branches setigerous. Lts. hairy on two sides. Cal. somewhat pinnate. *Fl. pink.* **s.S.** 6. Sc. and n. Eur.

- *β. doniana.* Of lower growth. Pr. crowded. Segments of Cal. nearly simple. Eng.
- *γ. gracilis.* Large, falcate Pr. even on the flowering branches. Segments of Cal. nearly simple. n. Eng. *rare.*

16. **lutea.** Mill Larger Pr. falcate; those on the shoots crowded? (Anthers hastate at base, Koch.) Lts. 5–9. Segments of Cal. pinnate. *Fl. yellow!* **S.** 6, 7. *Hedges.* G. *occ.*

E. Villosæ.

17. **ciliato-petala.** Bess. "Pr. stout, straight, subulate on a compressed base; those of branches few, falcate. Lts. 5–7, ovate. Free part of Stip. porrect. Fr. early, erect. Cal. erect or connivent. An extensively creeping shrub, covering the ground in considerable patches. **s.S.** 6, 7. Tyr. Carniola."—Koch. *Query, if* pulchella *of Woods in Linn. Trans.*

18. **villosa.** L Fr. large, globose. Cal. spreading. Segments nearly simple. Lts. 5–7, glandular. Pr. straight. **S.** 6, 7. *Hedges and thickets.* n. Eu. Alps. ✓

19. **tomentosa.** Sm Fr. elliptic or urceolate. Segments of Cal. pinnate. Lts. 5–7, usually glandular, very hairy. **S.** 6, 7. *Hedges and thickets.* n. and m. Eur. *An exceedingly variable plant. The L. are sometimes smooth.* ✓

20. **spinulifolia.** Demetra "Pr. subulate, straight, suddenly contracted from an expanded base. Lts. 7, covered beneath with stalked, somewhat prickle-like glands. Segments of Cal. pinnate, erect in the fruit. **s.S.** 6, 7. *Thickets.* Sw. *rare.*"—Koch. *Var. of* R. tomentosa?

F. Rubiginosæ.

21. **Seraphini.** "Erect. Pr. stout, falcate, on an expanded base. Lts. small, subrotund, smooth above, glandular beneath. Tube of Cal. ellipsoid in the flower, subglobose in the fruit. Segments pinnate. **s.S.** 5, 6. Lucca.

Nebrodes. Cors." *Smell sometimes bituminous.*—Bert. *Var. of* R. tomentosa?

22. **pustulosa.** "Erect. Pr. hooked, dilated at base. Branches sometimes armed with a mixture of smaller straight prickles and setæ. Lts. ovate, obtuse, hairless, glandular on both sides. Fr. ovoid, unarmed. **S.** 6, 7. Sic. Luc."—Bert. *Bertoloni says that his plant is not the* R. pulverulenta *of M. von Bieb., to which Gussone has referred it. Query, if the plants of Bertoloni and Gussone be the same.*

✓ 23. **rubiginosa** L. Branches armed with a mixture of smaller straight prickles. Setæ descending from flower-stalk on to branch. L. without glands on upper surface. Primordial Fr. pear-shaped. **S.** 6, 7. *Hedges and thickets, chiefly in calcareous soil.*

24. **inodora.** Fries Pr. equal, scattered. No setæ on branch. Primordial Fr. nearly globose; secondary elliptic. Pinnæ of Cal. crowded. Glands of Lts. few, sometimes wanting. **S.** 6, 7. *Hedges and thickets.* s. Eng.

25. **glutinosa.** "Erect. Pr. falcate, compresso-dilatate. Lts. small, subrotund or ovate, somewhat villous; very glandular beneath, somewhat glandular above. Tube of Cal. in flower ellipsoid. Segments pinnate, persistent. **s.S.** 5, 6. Palermo."—Bert.

26. **micrantha.** Sm Pr. equal, scattered. Primordial Fr. ellipsoid; secondary urceolate. Pinnæ of Cal. not crowded. *Fl. pink.* Lts. ovate. **S.** 6, 7. *Hedges and thickets.*

27. **Sepium.** Thuill Pr. equal, scattered. Primordial Fr. ovate; secondary ellipsoid or urceolate. *Fl. white.* Lts. elliptico-lanceolate. **S.** 6, 7. *Dry hills.* m. Eur.

28. **apennina,** J. W. Bush small, compact. Pr. very crowded, even to ends of branches, unequal. Fr. ellipsoid or urceolate. **s.S.** 7. Apenn. *Habit of* R. spinosissima.

G. Caninæ.

29. **cæsia.** Sm Segments of Cal. entire or nearly so. Lts. doubly serrate, downy. **s.S.** 6, 7. Sc. and Eng. *Query, if* R. glandulosa *of Bellardi belong to this species.*

30. **glandulosa.** "Pr. of Shoots few, somewhat falcate, compressed at base. Lts. 7, subrotund, doubly serrate, smooth beneath. Stip. of floral L. elliptic, dilatate; free part of the others divergent. Stalk and Cal. hispid. Segments pinnate. Fr. subglobose. **s.S.** 6. Sty. Upper Als. Sw."—Koch.

✓ 31. **rubrifolia.** Pr. stout. Segments of Cal. entire or nearly so. Lts. simply serrate, hairless, *glaucous*: these, when young, and the twigs red. **S.** 6. *Thickets.* Alps. Pyr.

32. **bractescens.** Woods Segments of Cal. pinnate. Pr. stout. Lts. simply serrate, downy on both sides. Stip. of floral L. very much enlarged. **S.** 6, 7. Lanc. and Westm.

33. **heckeliana.** "Dwarfish. Pr. hooked. Lts. small, subrotund, somewhat doubly serrate, silky on both sides, without glands. Tube of Cal. in flower ellipsoid; in fruit globose. Segments pinnate. **S.** 6, 7. Nebrodes."—Bert.

34. **canina** L. Segments of Cal. pinnate. Pr. stout. Lts. nearly or quite hairless on the upper surface. Stip. not much enlarged towards flower. **S.** 6, 7. *Hedges, &c.* ✓ *It varies with leaves dull or shining, green or glaucous, hairy beneath or quite smooth; serratures simple, or somewhat compound; fruit globose, ellipsoid, or urceolate;—and these characters present every possible variety of combination. The Fr.-stalk is usually smooth, but occasionally has a few hairs, and, in the var.* collina, *weak setæ.*

obtusifolia

H. Systylæ.

35. **systyla.** Bast Styles hairless. Pr. uniform, all stout and hooked. ✓ Shoots assurgent. Segments of Cal. somewhat pinnate. **S.** 6, 7. *Hedges.* Eur.

Huds

36. **arvensis.** Styles hairless. Pr. of the branches feeble, and often nearly straight; ✓ of the shoots very much expanded at the base. L. deciduous. Shoots trailing. Segments of Cal. somewhat pinnate. **S.** 7. *Thickets.*

β. L. shining. Sussex.

37. **sempervirens.** L. Styles hairy. Pr. ✓ falcate; of flowering branches small or wanting. L. persistent, shining. Shoots trailing. **S.** 6. *Dry.* m. and s. Eur.

Tribe VI. *POMEÆ.*

219. CRATÆGUS. L.

1. **laciniata.** "L. inciso-pinnatifid, hirsute. Segments acute, serrato-dentate at top. Stip. semiorbiculari-falcate. Segments of Cal. ovate, acuminate, reflexed. **S.** 4, 5. *Hills.* Sic."—Guss.

2. **lævigata.** "L. nearly entire, rusty beneath. Spines very short or wanting. Fr.-stalk and reflexed Segments of Cal. smooth." **S.** Abruzzi."—Ten. *These two are perhaps varieties of the following.*

✓ 3. **Oxyacantha.** L. L. cuneate at base, more or less lobed, serrate. Styles 1–3. Segments of Cal. acute, without glands. Divisions lanceolate. **S.** 5, 6. *Thickets. Varies with L. more or less divided; Styles* 1 *or more; Cal. smooth or downy; and these variations combined in all possible ways.* C. oxyacanthoides *of Bertoloni seems to be a variety of which the L. are partially serrulate.*

4. **Azarolus.** L. L. cuneate at base, trifid. Lobes obtuse, with two or three large teeth. Fr.-stalks and triangular Teeth of Cal. covered with curled hairs and without glands. **l.S.** 5. *Rough thickets.* s. Fr. Nice. Carniola. s. Tyr. *Not wild, according to Bert.*

Cotoneaster

✓ 5. **pyracantha.** Spach L. undivided, persistent, ovato-lanceolate, crenate, smooth. Segments of Cal. obtuse. Styles 5. *A thorny shrub.* **S.** 5. *Hedges and rough thickets.* s. Eur.

[Of *C. polyacantha*, Guss., I find no satisfactory description; it seems a variety of *Oxyacantha*. *C. pauciflora*, said to grow near Lausanne, is not noticed by Gaudin. It is, perhaps, a variety of *Mespilus germanica.*]

220. COTONEASTER. Medic

✓ 1. **vulgaris.** Lindl L. roundish ovate. **s.S.** 6, 7. *Rocky.* s. and m. Europe.

✓ β. *tomentosa.* Lindl Cal. and Stalks tomentose. Alps. Sic.

221. ARONIA. Pers.

✓ 1. **rotundifolia.** Pers L. subrotundo-oval, downy beneath when young. **S.** 5, 6. *Hills.* m. and s. Europe.

222. MESPILUS. L

✓ 1. **germanica.** L L. lanceolate, downy beneath. Fl. solitary. *Branches usually spinescent.* **s.T.** 5. *Thickets.* m. and s. Eur.

223. PYRUS. L

A. *Petals flat. Styles* 5, *free. Fruit not umbilicate at base.*

1. **communis.** L Corymb nearly simple. L. shining, ovato-lanceolate, serrate, hairless, as well as the buds and young branches. Stalks as long as L. **T.** 5. *Woods and thickets.* m. and s. Europe.

2. **bollwylleriana.** DC Corymb many-flowered. L. ovate, deeply and irregularly serrate, downy beneath, as well as the buds. **T.** 4, 5. Alsace and near Paris.

3. **salvifolia.** DC L. lanceolate, quite entire, downy beneath, as well as the buds; velvety above when young, afterwards hairless. **T.** 5. Orléans. Le Mans. Creuse.

4. **amygdaliformis.** Vill Spinescent. L. oblong, acute, somewhat serrate at top, downy beneath, as well as buds; velvety above when young, afterwards hairless; four times longer than stalks. Corymb simple. **s.T.** 3, 4. *Rough thickets.* s. France. Istria.

B. *Petals flat. Styles* 5, *connected at base. Fruit umbilicate at base.*

5. **cuneifolia.** "L. oblong or lanceolate, crenulate, cuneate at base, floccoso-pubescent beneath when young. Fl. in a corymb. (Stalks short, thickened and hardened in the fruit, Bert.) Stalks and Cal. woolly when young. Fr. globose. **T.** 4, 5. *Dry hills.* Sic."—Guss. Fr. umbilicate at base, according to Bertoloni, but I know not whether the styles are connected.

6. **Malus.** L Umbel simple, sessile. L. ovate, acute, crenate. **T.** 5. *Hedges and borders.*

α. Germen and underside of L. cottony.

β. *acerba.* DC Germen and underside of L. not cottony. ap. Greg.

224. CYDONIA. Tourn

1. **vulgaris.** Pers L. ovate, quite entire. **T.** 5. *Rocky thickets, stony, and hedges.* Danube in Austria. Fiume. s. Sw.

225. SORBUS. L

A. *Petals flat, spreading, white.*

1. **Aria.** Crantz L. ovate, cottony beneath. Lobes and Serratures decreasing towards the base. Corymb fastigiate. **s.T.** *Woods, mostly on a calcareous soil.* ✓

2. **latifolia.** Pers L. broadly ovate, cottony beneath. Lower Lobes the most distinct, spreading. Corymb fastigiate. **s.T.** 5. *Woods.* Würtemberg.

3. **hybrida.** L L. pinnate or pinnatifid at base, doubly serrate at the apex. Fl. corymbose. **s.T.** 5. *Rocky.* Isl. of Arran, Sc. ✓

4. **præmorsa.** "L. pinnate. Lts. oblongo-elliptic, obtuse: the inner gradually decreasing; the odd one præmorse and nearly obovate. Fl.-stalks downy. Fr. elliptic. **s.T.** 5, 6. Madonie."—Guss.

5. **aucuparia.** L L. pinnate, downy beneath. Buds downy. Lts. serrate, acute, nearly alike. ✓

Fl. in a corymb. Fr. globose. **T.** 5, 6. *Hill woods.*

6. **domestica** L L. pinnate, downy beneath. Buds glutinous, hairless. Lts. alike, serrate. Fl. in a panicle. Fr. pyriform. **s.T.** 4, 5. *Hills.* Austr. Carn. adr. G. Lorr.

7. **torminalis.** Crantz L. ovate, lobed. Lobes triangular, acuminate, serrate; the lower ones larger, spreading. Fl. in a compound corymb. Styles about 2. **T.** 4, 5. *Woods. occ.*

8. **florentina.** L. cordate, lobed, serrate, tomentose beneath. Corymb nearly simple. Styles 5. **s.T.** 5. It. *occ.*

B. *Petals erect, concave, pink. Styles 2.*

9. **Chamæmespilus.** Crantz L. elliptic or lanceolate (ovate, DC.), serrate. Corymb like a head. **s.S.** 6, 7. *High rocky.* Alps and Pyr. *occ.* ✓

β tomentosa leaves white downy below

XXXII. GRANATEÆ. Don

Fruit a number of berries enclosed in a coriaceous capsule. Capsule divided into two parts by a horizontal membrane, and the lower part divided into three cells; the upper into five or more.

226. PUNICA. L

1. **Granatum.** L A shrub. L. lanceolate. **S.** 6, 7. *Dry. escapes.* s. Europe.

XXXIII. ONAGRARIÆ. Juss

Calyx of 2 or 4 lobes. Petals 2 or 4. Stamens 2, 4, or 8. Ovary of several cells, with a central placenta. Albumen 0.

227. EPILOBIUM. L

A. *Flowers irregular. Style at length bent down! All the L. alternate.*

1. **angustifolium** L L. lanceolate, nearly entire, veined. Bract detached from flower-stalk. Pet. on claws. **p.** 7, 8. *Hill woods.*

2. **rosmarinifolium.** Haenk Stem ascending. L. lineari-lanceolate, nearly entire, without veins. Pet. sessile. Style pubescent at base, as long as stamens. **p.** 7, 8. *On the gravel of mountain torrents.* Alps, &c.

3. **Fleischeri.** Hochst Stem procumbent. L. lineari-lanceolate, nearly entire, without veins. Pet. sessile. Style pubescent to above the middle, half as long as stamens. **p.** 7, 8. *High Alpine valleys.* Tyrol. s. Alps.

B. *Flowers regular. Stem without elevated lines. Lower L. opposite.*

4. **hirsutum.** L Hairy. L. semiamplexicaul, somewhat decurrent, lanceolato-oblong, denticulato-serrate. Stigma 4-cleft. Stem much branched. Root creeping. **p.** 7. *Wet.*

5. **parviflorum.** Schreb Stigma 4-cleft. L. sessile, lanceolate, downy. Stem nearly simple, woolly. Root fibrous, without runners. **p.** 7. *Wet.*

6. **montanum.** L Stigma 4-cleft. L. ovate, toothed; the lower stalked, opposite, and alternate. Stem pubescent. Root without runners. **p.** 7. *Shady hills.* ✓

7. **hypericifolium.** Tausch L. ovate, acuminate, quite entire; the lower stalked. No runners. **p.** 6, 7. *Shady hills.* Bohemia. *Easily distinguished from* E. montanum *by the entire margin of L.*

8. **lanceolatum.** Sebast Stigma 4-cleft. L. lanceolate, attenuate at base, remotely toothed, hairless, stalked. **p.** 7, 8. *Shady hills.* Rome. Naples. Sicily. ✓

9. **palustre.** L Stigma undivided. L. lanceolate, cuneate at base, sessile. Runners slender. **p.** 7, 8. *Peaty.* ✓

C. *Lower L. opposite. Stem with 2 or 4 elevated lines.*

10. **tetragonum.** L L. ovato-lanceolate, sessile, minutely toothed; those of the middle

somewhat decurrent; lowermost somewhat stalked. Stem much branched. Stigma club-like. **p.** 7. *Wet.*

11. **virgatum.** Fries L. lanceolate, gradually narrowing from a rounded base, remotely toothed, nearly sessile; upper on short stalks. Seeds obtuse. Stigma club-shaped or somewhat 4-cleft. (Runners slender, not forming rosettes, Bab.) **p.** 7, 8. *Meadows and moist woods.* Eng. G."—Koch. *Resembles* E. palustre.

Lamyi

✓ 12. **trigonum.** Schrank L. opposite or in threes or fours, somewhat amplexicaul, oblongo-obovate, acuminate, dentate; uppermost alternate. Stem nearly simple. Stigma club-like. **p.** 7, 8. *Mountain meadows.* Alps. Vosges. *Resembles* E. roseum.

✓ 13. **roseum.** Schreb L. stalked, oblongo-lanceolate, closely denticulate. Stem much branched. Stigmas at first united. Seeds obtuse. **p.** 7. *Marshy streams.*

✓ 14. **alsinifolium.** L. somewhat stalked, ovate, acuminate, remotely repando-dentate, hairless. Stem few-flowered; the raised lines hairy. Seeds contracted into a neck. **p.** 7, 8. *Mountain springs.*

Duriaei

✓ 15. **alpinum.** L. somewhat stalked, elliptico-lanceolate, obtuse, mostly entire. Stem 2–3-flowered; the raised lines hairy. Seeds with a neck. **p.** 6, 7. *Mountain rivulets.* Scotl. Alps. Pyr.

228. ŒNOTHERA.

✓ 1. **biennis.** Stem harshly villous (roughish, somewhat hairy, Koch). L. ovato-lanceolate, flat, denticulate. Stamens somewhat shorter than corolla. Caps. nearly cylindrical, 4-toothed, sessile. **b.** 7–9. *Naturalized in sandy soil. occ.*

2. **muricata.** Hairs of Stem scattered, bulbous. L. lanceolate, flat, denticulate. Stamens as long as corolla. **b.** 6–8. *Gravelly shores.* Freiburg in Brisgau, and on the Elbe in Mecklenburg and Holstein. Nevers.

229. ISNARDIA.

1. **palustris.** Stem creeping, hairless. L. opposite, ovate, acute, stalked. Fl. sessile, axillary, solitary, without petals. **a.** 7. *Wet grassy. occ.*

230. CIRCÆA.

1. **lutetiana.** Stem erect, pubescent. L. ovate, acuminate, dentate, dull, longer than stalk. Rac. flowering to the base, without bracteoles. **p.** 5–7. *Shade.*

2. **alpina.** Stem ascending, nearly without hairs. L. cordate, dentate, shining, as long as stalk. Rac. naked at base, with setaceous bracteoles. **p.** 7, 8. *Mountain shade.*

β. *intermedia.* Ehrh Larger, and more like *lutetiana.*

231. TRAPA.

1. **natans.** Horns of the Fruit 4, rough backwards. **a.** 6, 7. *Still water.* m. and s. Europe. *occ.*

XXXIV. HALORAGEÆ.

Flowers superior, inconspicuous. Stamens 1, 2, 4, or 8. Germen of 1 or more cells, each with its style. Fruit dry, not bursting. Seed pendulous.

232. MYRIOPHYLLUM.

✓ 1. **verticillatum.** Fl. in axillary whorls. Bracts pectinato-pinnatifid. **p.** 7, 8. *Stagnant water.*

α. *pinnatifidum.* Bracts many times exceeding flowers. Pinnæ remote.

✓ β. *intermedium.* Bracts three times exceeding flowers. Pinnæ approximate.

✓ γ. *pectinatum.* Bracts about equal to flowers. Pinnæ almost touching.

✓ 2. **alterniflorum.** DC Barren Fl. alternate, about 6 in a spike, at first nodding. Fertile Fl. about 3, axillary at base of barren spike. **p.** 7, 8. *Clear, still, shady pools.* G. Fr. *rare.*

3. **spicatum.** Divisions of L. setaceous. Fl. in leafless whorls. Spike always erect. Upper Bracts entire, shorter than flowers. **p.** 7, 8. *Still water.*

233. CALLITRICHE.

1. **verna.** Lobes of Fr. parallel, bluntly keeled. Styles always erect, evanescent. Bracts falcate. *Lower L. linear;* upper

generally obovate. **a.** or **p.** 4–9. *Stagnant water.*

2. **stagnalis.** Scop Lobes of Fr. slightly winged. Styles reflexed on the fruit. Bracts falcate. **a.** or **p.** 5–9. *Stagnant water.*

α. All L. obovate. Lobes of Fr. stellately divergent.

✓ *β. platycarpa.* Kuh3 Jf Lower L. linear. Lobes of Fr. parallel.

3. **hamulata.** Kt39 Lower L. linear; upper obovate. Fr. winged on the angles. Styles very long, divaricate. Bracts circinnate, hooked at top. **p.** *Still water.*—Koch.

4. **pedunculata.** DC Lower L. linear; upper oblong, 3-nerved. Lobes of Fr. obtusely keeled. Styles reflexed on fruit. Bracts 0. **a.** 6. *Still water.* ✓

5. **autumnalis.** L L. all 1-nerved, broadest at base, truncate. Fr. sessile. Lobes stellately divergent, broadly and acutely winged at back. Bracts 0. **a.** 6–10. *Still water. According to Koch, all the species are perennial.*

234. HIPPURIS. L

1. **vulgaris.** L L. linear, 6–10 in a whorl. **p.** 7. *Still water. Not in Sic.* ✓

XXXV. CERATOPHYLLEÆ.

Flowers monœcious, inconspicuous. Perianth single, many-cleft. Anthers 12–20, sessile, with 2 cells and 2 points. Fruit with 1 cell and 1 pendulous seed.

235. CERATOPHYLLUM. L

1. **submersum.** L L. dichotomous. (Margin of Cal. notched at the end, Bab.) Fr. oval, naked at base, terminated by the very short, curved style. **p.** 6, 7. *Still water.* n. and m. Europe. *occ.*

2. **demersum.** L L. dichotomous. (Segments of Cal. acute, entire, Bab.) Fr. oval, with 2 recurved spines at base, and terminated by a curved, subulate style, as long as fruit. **p.** 7, 8. *Still water.*

3. **platyacanthum.** Cham L. dichotomous. Fr. obovate, with 2 spines at the base and an intermediate wing ! on each side. **p.** 7, 8. *Still water.* Berlin. Nancy.

XXXVI. LYTHRARIÆ.

Calyx inferior. Petals, if any, seated above the stamens, on the top of the tube of the calyx. Germen of 2 or 4 cells. Seeds numerous, on a central placenta.

236. SUFFRENIA.

1. **filiformis.** Bell Stem creeping. L. opposite, sessile, elliptic. Fl. solitary, axillary, sessile. **a.** 8, 9. *Rice grounds.* Vale of Po.

237. PEPLIS. L

1. **Portula.** L L. opposite, obovato-subrotund, attenuate. Fl. axillary, solitary. Fr. globose. **a.** 6–9. *Wet.*

2. **nummulariifolia.** erecta Req Jord L. nearly all opposite, obovate. Fl. axillary, solitary. Fr. ovoid. **a.** 6. *Marshy.* mdt. Fr. Cors. Sard.

3. **Boræi.** Jord L. alternate, oblongo-obovate. Fl. axillary, solitary. Fr. globose. **a.** *Inundated.* Nantes. Angers.—Jordan.

4. **Timeroyi.** Jord L. alternate, obovate. Fl. axillary, solitary. Fr. ovoid. **a.** *Sides of pools.* Rhone.—Jordan.

238. AMMANNIA.

1. **verticillata.** Stem erect, 4-edged. L. lanceolate, nearly sessile. Fl. whorled, crowded, sessile. Caps. not exceeding calyx. **a.** 6, 7. *Wet.* n. It.

239. LYTHRUM. L

A. *Stamens fewer than* 10. *Flowers axillary, solitary* (*except in* 3).

1. **thymifolia.** L Stamens 2. Pet. 4. Fl. in short, erect racemes. L. alternate, linear. Bracts leafy, obovate. **a.** 5, 6. *Marshes.* mdt. Fr. Mantua. Pisa. Sardinia. Calabria.

2. **hyssopifolia.** L Stamens 5, 6. Pet. 6. ✓

Fl. solitary. L. opposite and alternate, lineari-lanceolate, somewhat obtuse. Bracts 2, minute, subulate. **a.** 7–9. *Overflows.*

3. **geminiflorum.** Bert "L. alternate, lineari-lanceolate. Stalks in pairs, axillary, 1-flowered. Cal. campanulate, with 8 or 12 erect teeth. Pet. lanceolate, obtuse, small. **a.** 8, 9. Rotta di Luzzara near Mantua."—Bert.

B. *Flowers solitary, axillary. Stamens* 12.

4. **Græfferi.** Ten "Stem diffuse, branched, angular. L. alternate: lower elliptico-oblong; upper lineari-lanceolate. Pet. 6. Teeth of Cal. nearly setaceous, connivent. **p.** 5–9. *Moist.* It. Sic."—Guss. ✓

5. **Preslii.** Guss "Stem nearly simple and erect, with 4 winged angles. L. alternate, cordato-oblong. Pet. 6. Teeth of Cal. short, spreading. *Fl. nearly as large as those of* L. Salicaria. **a. p.** 5, 6. *Moist.* Sic."—Guss. *Bertoloni considers this the same as the preceding.* is L. Gr. g.

C. *Flowers in spikes. Stamens* 12.

6. **Salicaria.** ∠ L. opposite or in threes, cordato-lanceolate. Fl. in whorls, nearly sessile. Inner Teeth of Cal. twice as long as outer. **p.** 7, 8. *Banks of ditches and streams.* ✓

7. **virgatum.** ∠ L. opposite, lanceolate: lower rounded at base; upper attenuate at both ends. Lower Fl. in whorls; upper alternate. Teeth of Cal. of equal length. **p.** 6, 7. s. e. Germany. ✓

4 & 5 are syns. of L. acutangulum Lag. in Nyman's Consp. Fl. Eur. My Edin spm has winged angles & short spreading calyx teeth of L. Preslii above. Also fls. large. E. F. L.

XXXVII. TAMARISCINEÆ.

Calyx 5-partite. Petals 5, both imbricate in the bud, inferior. Stamens equal to petals or twice as many. Stigmas 3. Capsule 3-edged, 3-valved, 1-celled, many-seeded. Placentas 3. —Shrubs.

240. TAMARIX.

1. **gallica.** ∠ Smooth, glaucous. L. ovate, acuminate. Spikes lateral, long, cylindrical. Bracts acuminato-cuspidate. **1.S.** 7. *Sandy shores of sea and rivers.* m. and s. Eur. ✓

[The English plant is said to differ from this in having L. narrower at base, an hypogynous ring with 5 angles instead of 10 lobes, a shorter point to the anthers, and a capsule abruptly narrowed instead of gradually tapering from the base; but we have no *Tamarix* which has any reasonable pretence to be called a native of England.]

T. anglica Webb

2. **africana.** Poir Smooth, somewhat glaucous. L. ovate, acuminate. Bracts oblong or lanceolate, on an ovate base, but blunt at the point, with a scariose margin. Spikes lateral, elliptic, *hardly three times as long as broad.* **1.S.** 6, 7. *Sea-shore.* s. Fr. Isl. Osero. ✓

3. **germanica.** ∠ Stamens 10, alternately shorter. Filaments united for half their length. L. lineari-lanceolate, sessile. Spikes solitary, terminal. Bract longer than flower-stalk. **S.** 6, 7. *Gravel of rivers.* s. Eur. ✓

XXXVIII. PHILADELPHEÆ.

Calyx semisuperior, 4–10-partite, persistent. Petals as many as divisions of calyx, convolute in the bud. Stamens 20 or more. Stigmas numerous. Capsule 4–10-celled. Seeds many, crowded in the internal angles of the cells, each with a loose membranous aril. Albumen fleshy. *Shrubs with opposite impunctate L. and no Stipules.*

241. PHILADELPHUS. ∠

1. **coronarius.** ∠ Fl. in racemes. Style 4-partite, shorter than stamens. L. elliptic, acuminate, serrato-denticulate, 3-nerved. **1.S.** *Among beeches on mountains.* Ver. Vic. Tyrol. *Hedges* in Dau.

XXXIX. MYRTACEÆ.

Calyx superior, 4–6-cleft. Petals 4–6. Fr. of many cells, with central placentas. Style 1. Seeds without aril or albumen. *Shrubs.* L. opposite, with glandular dots. No Stipules.

242. MYRTUS. L

1. **communis.** L Seeds curved, irregularly disposed. Stalks solitary, 1-flowered. Bracts 2, linear, deciduous. L. ovate or lanceolate, acute. **S.** 6, 7. *Dry stony or sandy coasts.* s. Europe.

β. *mucronata.* L. lineari-lanceolate, acuminate.

tarentina

XL. CUCURBITACEÆ.

Calyx superior, with 5 teeth. Corolla 5-cleft, growing from calyx. Stamens 5, four of them united in two pairs. Style 1. Fruit of 3 cells, with parietal placentas fixed to the outer angles of the cells, fleshy. Albumen 0. *Stems weak, mostly climbing.*

243. BRYONIA. L

1. **alba.** L L. cordate, 5-lobed, dentate, calloso-scabrous. Fl. racemoso-corymbose, monœcious. Cal. in fertile flowers as long as corolla. Stigmas smooth. *Berry black.* **p.** climber. 6, 7. *Hedges and thickets.* Lorr. Pyr. Ger. *occ.*

2. **dioica.** L. Jac L. cordate, 5-lobed, dentate, calloso-scabrous. Fl. racemoso-corymbose, diœcious. Cal. in fertile flowers half as long as corolla. Stigmas hirsute. *Berry red.* **p.** climber. 6, 7. *Hedges.*

244. MOMORDICA. L

1. **Elaterium.** L Tendrils none. Fr. hispid, on long stalks. L. cordate, somewhat lobed, crenato-dentate, wrinkled, long stalked. **a.** 7–9. *Warm, uncult.* s. Europe.

245. CUCUMIS. L

1. **Colycinthis.** L L. cordate at base, multifid, very rough. Tendrils simple. Fl. solitary, on short stalks. Fr. globose, smooth. **a.** 6, 7. *Volcanic sand.* Pantellaria. ✓

XLI. PORTULACACEÆ.

Calyx usually in two parts. Corolla in five. Style 0. Stigmas several. Capsule of 1 cell. Placenta central. Embryo curved round the albumen. *Small plants, with somewhat fleshy L. and sessile Flowers.*

246. PORTULACA. L

1. **oleracea.** L Prostrate. Divisions of Cal. obtusely keeled. **a.** 6–9. *Cult. and uncult.* m. and s. Eur.

2. **sativa.** Haw Erect. Divisions of Cal. with a winged keel. **a.** 6–8. *Cultiv.* m. and s. Eur.

3. **pilosa.** "Axils hairy! L. subulate, alternate. Fl. terminal, sessile. **a. b.** Sic." —Guss. *from* Cupani.

247. MONTIA. L

1. **fontana.** L Branches divaricate. L. somewhat connate. **a.** 4–8. *Sandy wet.* ✓

rivularis ✓

XLII. PARONYCHIEÆ.

Calyx 5-parted, imbricate in the bud, persistent. Petals 5, small, sometimes wanting. Capsule superior, of 1 cell. Placenta central. Embryo curved. Albumen farinaceous, *small. Herbs with opposite L. and scariose Stipules.*

248. TELEPHIUM. L.

1. **Imperati.** L. Procumbent. L. alternate. Fl. crowded, in a raceme-like corymb. **p.** 7. *Open rocks.* s. Fr. s. Tyr. Vall. Susa.

249. CORRIGIOLA. L.

1. **telephiifolia.** Pourr Corymb leafless, on long stalk. Fl. stalked. Stem-L. obovate. **p.** 6, 7. *Sandy fields.* Perpignan. Prades le Boulon.

2. **littoralis.** L. Corymbs leafy, nearly sessile. Fl. stalked. Stem-L. lineari-cuneate, alternate. **a.** 7, 8. *Gravel or sandy.* s. and m. Eur.

250. HERNIARIA. Tourn

A. *Small. Stems prostrate. Flowers in axillary clusters.*

1. **glabra.** L. Stem smooth, or clothed with short and somewhat deflexed hairs. L. elliptic, obtuse, smooth, or with a few hairs towards the top, or more or less ciliate. Clusters axillary, coalescing on the lateral branches into a somewhat leafy spike. Cal. nearly hairless. (Stem extensively rooting, Bab.) *but I do not usually find it so.* **p.** 7–9. *Dry, sandy or stony.* m. and s. Eur.

2. **ciliata.** Bab Stem clothed with minute decurved hairs. L. elliptic, obtuse, ciliate, and sometimes with a few hairs on the surface. Clusters axillary; those on the lateral branches distinct. Sepals tipped with a strong bristle. Root woody. Stem rarely rooting. **p.** 7, 8. Lizard Point, Cornwall. Guernsey. *I adopt this from Bab. It seems hardly distinct from the preceding, though in some respects between that and* H. alpina.

3. **alpina.** Vill Stems clothed at first with somewhat deflexed hairs. L. elliptic, ciliate, and generally with scattered hairs on the surface. Clusters axillary, few-flowered, crowded towards the ends of the branches. Cal. everywhere covered with equal hairs. **p.** 7, 8. *Very high, rocky.* w. Alps.

4. **hirsuta.** L. Stem densely covered with spreading hairs. L. elliptic, everywhere hairy. Clusters axillary, 5–10-flowered, distinct. Cal. very hairy, tipped with a long bristle. **p.** 7–9. *Sandy fields.* m. and s. Eur. *Neither this nor the preceding seem to throw out roots.*

5. **incana.** Lam "Stem-L. obovate or oblong, ciliate, attenuate. Clusters lax, about 3-flowered. Hairs of the divisions of the Cal. equal. **p.** 5, 6. adr. G."—Koch. *This appears to me to be annual, and to be the* H. cinerea *of Gussone.*

B. *Stems* latifolia *erect. Flowers hairless, in a loose cyme.* Cav

6. **polygonoides.** Branches dichotomous at top. L. distant, ovate, cuspidate. Stip. linear, acuminate, half as long as L. Fl. terminal, sessile. **s.S.** 6, 7. *Coast.* s. Fr.

251. ILLECEBRUM. L.

1. **verticillatum.** L. Stems prostrate. L. nearly round. Fl. minute, in whorled clusters. Stip. scariose. **p.** 7, 8. *Peaty or moist sandy. Not in Italy.*

252. PARONYCHIA. Tourn

A. *Sepals dilated at top. Flowers in a cyme.*

1. **cymosa.** Lam Stem erect. Branches divaricate. L. in whorls, somewhat terete, awned. Ultimate Fl. in cymes. Cal. awned. **a.** 5. *Sandy.* Cevennes. Orange. Fréjus.

B. *Sepals not dilated upwards. Flowers in axillary clusters.*

2. **echinata.** Lam Prostrate. Points of the Hood of the Sepals lengthened into awns. L. elliptic, ciliato-serrate. Stip. much shorter than L. Bracts much shorter than flowers. **a.** 5, 6. *Very dry.* Prov. Sic.

3. **longiseta.** "Procumbent. L. obversely lanceolate, mucronato-aristate, ciliolate. Heads terminal and lateral. Bracts ovato-lanceolate, acuminate, equalling or exceeding flowers. Segments of Cal. oblong, 1-nerved, with a broad margin, arched, with a seta as long as the segment below the arch. **p.** 5. *Sea-shore.* Nice."—Bert.

4. **polygonifolia.** DC Prostrate, diffuse. Segments of Cal. with a short point. Setæ below

the incurved extremity. L. oblongo-linear, attenuate. Stip. membranous, lanceolate, as long as L. Fl. 1–3. **p.** 6, 7. *Beds of torrents.* Alps of Dau. Pyr.

5. **argentea.** L Stems prostrate, diffuse. Segments of Cal. with a short point below the incurved extremity. L. elliptic, attenuate. Fl. capitate, immersed in acute, shining, scariose bracts. **p.** 5, 6. *Open dry.* s. Fr. It.

6. **capitata.** Lam "Procumbent or ascending. Segments of Cal. pointless. L. elliptic or lanceolate, somewhat obtuse, ciliate. Heads of Fl. hid among the broadly ovate, mucronate, shining, scariose bracts. **p.** 6. *Dry hills.* Adriatic G."—KOCH. s. Fr.? "Segments of Cal. acuminate. L. acute."—BERT.

7. **nivea.** DC Decumbent. Segments of Cal. pointless, lineari-lanceolate, obtuse, (acuminate, GUSS.) hispid, striate, unequal. Heads of Fl. hid among the broadly ovate, acute, shining, scariose bracts. L lanceolate, acute. **p.** 4, 5. *Dry warm hills.* Narb. Mont Ventous. Lig. Sicily.

8. **serpyllifolia.** DC Creeping. Segments of Cal. pointless, oblong, obtuse, hirsute. Heads of Fl. terminal, hid among the suborbicular bracts. L. ovate, obtuse, thick, ciliate, otherwise hairless. **w.** 6. *Mountains.* Pyr. Dau. Italy. v of 6 Gr v G.

253. POLYCARPON. L

✓ 1. **tetraphyllum.** L Triandrous. Pet. emarginate. L. in fours on stem, opposite on branches. **a.** 8, 9. *Walls and sandy.* m. and s. Eur.

2. **alsinifolium.** DC Pentandrous. Pet. nearly entire, shorter than calyx. L. opposite, or in fours, oval, somewhat fleshy. Stip. and Bracts ovate. **a.** 4, 5. *Sandy shores.* Sic. Between Cette and Narbonne. v of 1 Gr v G.

3. **peploides.** DC Pentandrous. Pet. quite entire, as long as calyx. L. small, opposite, sometimes in fours, ovate or obovate, acute. Stip. and Bracts lanceolate. **p.** 5, 6. *Stony.* Sic. Between Perpignan and Collioure. ✓

254. SCLERANTHUS. L

1. **perennis.** L Cal. of Fr. closed. Segments obtuse, with a broad membranous margin. **p.** 5–9. *Barren fields. occ. Not south of Alps.* ✓

2. **annuus.** L Cal. of Fr. open. Segments somewhat acute, with a narrow membranous margin, as long as the tube. **a.** 7. *Barren fields.* ✓

3. **polycarpus.** DC Cal. of Fr. open. Segments acute, without a border, shorter than the tube. **a.** 6, 7. *Sandy.* m. Fr. It.

255. LŒFLINGIA. L

1. **hispanica.** L Anthers 3. Style trifid. Stem branched, prostrate, viscid. L. opposite, subulate, mucronate, with a bristle on each side of the base. **a.** 4, 5. Isl. of Ste. Lucie near Narbonne. Rous. Sic. ✓

XLIII. CRASSULACEÆ. DC

Sepals 3 to 20, more or less united at base, inferior. Petals as many, inserted on base of calyx. Stamens equalling petals, or twice as many. Follicles as many as petals, 1-celled. Seeds on the inner suture. L. fleshy, without stipules.

256. TILLÆA. L

1. **muscosa.** L Stems branched, decumbent at base. Fl. axillary, sessile, mostly 3-cleft. **a.** 5, 6. *Sandy. occ.*

257. BULLIARDA. DC

1. **Vaillantii.** DC Erect, dichotomous. L. oblong, acute. Fl.-stalks exceeding L. **a.** 7, 8. *Moist, shady, sandy.* Fontainebleau. Nussdorf in Austr. It.

2. **aquatica.** DC Erect, somewhat dichotomous. L. lineari-lanceolate. Fl.-stalk very short, or 0. **a.** 8, 9. *Wet sandy.* Elbe at Wittenberg. Boh.

258. UMBILICUS. DC.

1. **pendulinus.** DC Lower L. peltate, concave. Fl. tubular, pendulous. Segments acute. Bracts minute, entire. **p.** 6–8. *Walls and rocks.* ✓

2. **horizontalis.** Lowermost L. peltate, concave; upper lanceolate. Fl. erect, afterwards horizontal, ovoid. Segments acuminate.

Bracts lineari-setaceous, entire, exceeding the flower-stalk. **p.** 5, 6. *Walls and rocks.* Rome. Nap. Sic.

✓ 3. **sedoides** DC Somewhat creeping. Fl. few, in a corymbose head. L. oblong, sessile, obtuse. **a. p.** *Snowy.* Vallée d'Eynes, Vignemale in Pyr.

259. RHODIOLA. L

✓ 1. **rosea.** L Root large, fleshy, above ground. **p.** 6. *High wet rocks.* Br. Fr. G. Alps. On the sea-coast on the west of Ireland.

260. SEDUM. L

A. Root strong, perennial, producing many stems, but no creeping runners. L. flat. Sp. 1–4.

B. Root slender, annual or biennial. No creeping runners.

- **i.** L. flat. Sp. 5–11.
- **ii.** L. terete or semiterete.
  - **a.** Stamens 5. Sp. 12–14.
  - **b.** Stamens 10. Sp. 15–20.

C. Stems perennial, creeping, throwing up annual flowering-branches.

- **i.** Flowers not yellow. Sp. 21–27.
- **ii.** Flowers yellow.
  - **a.** Stems slender, all L. nearly equal. Sp. 28–31.
  - **b.** Stems stout. L. of flowering-branches gradually smaller. Sp. 32–38.

A. *Root strong. Stems many. No Runners. L. flat.*

Suter

1. **maximum.** L. cordato-oblong, obtuse, dentate, often opposite or in threes. Corymb dense, terminal. Pet. straight, somewhat hooded at top, and with a minute horn, *yellowish.* **p.** 7, 8. *Walls, rocks, and banks.* G. Alps. *occ.*

2. **Telephium.** L L. oval, oblong, obtuse, serrate; lower attenuate, often opposite or in threes. Corymb dense, terminal. Pet. somewhat recurved, not hooded, *purplish.* **p.** 7, 8. *Banks and thickets.*

Koch

sp. β. *Fabaria.* All L. attenuate. Just introduced

3. **Notarjanni.** "Stems ascending, somewhat woody at base. L. stalked, ovate, sinuato-dentate, hairless. Fl. few, terminal. Pet. lanceolate. **p.** *Calc. rocks.* Fondi. *very rare.*" —Ten.

4. **Anacampseros.** L L. obovate, quite entire, hairless. Stems decumbent. Corymb dense, terminal. **p.** 7. *High rocks.* Alps.

B. *Root slender, annual or biennial. No creeping shoots.*

i. *L. flat, not round or semiround.*

5. **uniflorum.** "Stem erect, simple, glandular. L. opposite, sessile, obovate. Fl. solitary, terminal, sessile. Segments of Cal. unequal, obtuse. Pet. lanceolate, falling short of calyx. **a.** Bosco del Capelliere, Sic."—Guss.

6. **stellatum.** L L. roundish, attenuate, angulato-crenate, hairless; lowermost entire. Fl. sessile on one side of branch of cyme. Pet. lanceolate, *pink.* **a.** 6, 7. *Rocks, walls, and dry banks.* m. and s. Eur.

Guss

7. **littoreum.** Stem ascending or erect. L. oblongo-spatulate, entire, convex on the back. Cyme usually trifid. Branches undivided. Fl. sessile. Sepals obtuse. Pet. lanceolate, acute, as long as sepals, *yellow.* **a.** 4, 5. Cal. Sic. *Guss. puts this with the terete-leaved* Sedums. *Its apparent similarity to* stellatum *makes me willingly follow Bert. in placing it with those which have flat L.*

8. **magellense.** L. obovato-oblong. Rac. long, terminal, sometimes branched. Capsule erect, with a short beak, exceeding corolla. **a.** 7. 8. *Mountain rocks.* Abruzzi.

9. **alsinifolium.** All "Stems decumbent or erect. L. obovate, stalked, scattered. Pan. branched, lax, few-flowered. Partial Stalks long. Divisions of Cal. lanceolate, acute. The whole plant pubescent. **a.** 7, 8. *Rocks.* Pdm."—Bert. *Var. of* S. Cepæa.—DC.

✓ 10. **Cepæa.** L L. spatulate, entire: lower often in whorls; upper lineari-cuneate. Pan. oblong, much branched. Partial Stalks not long. Pet. lanceolate, finely cuspidate. **a.** 6, 7. *Shady rough.* s. Eur.

Cruciatum Desf. Ball

11. **monregalense.** L. in 4, lineari-lanceolate. Stems ascending, diffuse, downy at top. Pan. somewhat corymbose. Fl. on long stalks. Pet. acuminate. **p.** 6, 7. Pdm. Cors. Alpi Apuanc.

ii. *L. round or semiround.*

Grassulata **a.** *Stamens* 5.

12. **Magnolii.** DC Cal. without hairs or glands. Segments acute. L. ovate, obtuse, imbricate. Fl. solitary, secund, sessile. **a.** 4. *Open hills.* mdt. Fr. Ist. Nap.

Caespitosum DC

13. **rubens.** L Erect, branched. L. oblong,

obtuse, nearly terete, sessile, spreading, hairless. Fl. solitary, secund, sessile. Cal. and Stalks with glandular hairs. **a.** 5–7. *Dry fields.* m. and s. Eur.

14. **andegavense.** DC Stem erect, simple at base, trichotomous at top. L. broadly obovate, hairless. Fl. cymose, sessile. Sepals obtuse. Pet. ovate, coriaceous, rough on back, somewhat acute. **a.** 5, 6. *Rocks.* Anjou. Cors. Sard.

b. *Stamens* 10.

15. **annuum.** L Erect, branched from base. Branches forked, at last long and flexuose. L. cylindrical, obtuse. Cyme hairless. Fl. secund, sessile. **b.** 6–8. Alps. Vosges and n. G.

16. **atratum.** L L. clavato-terete, adnate. Corymb simple, terminal, dense, hairless, fastigiate after flowering. Fl. stalked. Pet. obtuse, with a small point, twice as long as calyx. **a.** 7, 8. *High, open, rocky.* Alps. Pyr. ✓

17. **villosum.** L L. somewhat flattened above, scattered, erect: these and the corymbose Pan. viscid, with glandular hairs. **a.** DC., **b.** Koch, **p.** Sm. 7. *Boggy. In sandy corn-fields in parts of Fr. Query, if the same species.* ✓

18. **glandulosum.** "Covered with glandular hairs. Stem erect. L. cylindrical, scattered. Fl. in a simple or forked raceme. Segments of Cal. very short and blunt. Pet. oblong, acute. Capsule erect, with a very short beak. **a.** 6. *Moist mountains* of Mongorgori and Gennargentu in Sard."—Bert.

19. **hispanicum.** L Stem branched. L. scattered, terete, somewhat acute. Cyme branched, racemose. Pet. 6, acuminato-aristate. Anthers 12. Capsule pubescent. **a.** or **b.** 7. *Rocks.* Alps. It. ✓

20. **cæruleum.** Vahl L. scattered, oblong, adnate. Stem erect or ascending. Pan. diffuse. Partial Stalks filiform. Pet. usually 7, lanceolate, acuminate. Stamens 10–15. Capsule with a long beak. **a.** 4, 5. *Rocks and walls.* Sic. Cors.

C. *Stems creeping, perennial, throwing up annual flowering-branches.*

i. *Flowers pink or white.*

21. **dasyphyllum.** L L. ovato-subglobose, *glaucous,* gibbous at base, many of them opposite. Pan. with glandular hairs. **p.** 6, 7. *Walls and rocks among mountains. rare.*

22. **glanduliferum.** Guss. "Glanduloso-pubescent. Stems slender. L. elliptico-spatulate, adnato-sessile, marked with pellucid glands. Pan. terminal, few-flowered. Pet. acute. **p.** 4, 5. *Walls, roofs, rubbish.* Sic. Nap."—Guss. *Differs from* S. dasyphyllum *in the attenuate L. without red spots.* is 21β Gr v G.

23. **brevifolium.** DC "Stems woody, twisted at base, hairless. L. short, ovate, obtuse, fleshy; those of the shoots opposite. Cymes quite hairless, lax, terminal. Sepals thin. Pet. somewhat obtuse. **p.** 7, 8. *High, rocks and open pastures.* Pyr. Cors."—DC. ✓

24. **corsicum.** Dub Stem ascending, branched at base, twisted. L. obovate, rotund, attenuate, hispid, those of the shoots crowded. Cyme terminal, few-flowered, hairless. Pet. somewhat acute. **p.** *Walls.* Corte in Cors., and Jessu in Sard. *Differs from* S. dasyphyllum *in the hairy attenuate L. Bertoloni considers these three as forms of* S. dasyphyllum. is 21β. same as 2 Gr v G.

25. **anglicum.** Huds L. ovato-subglobose, adnate, and prolonged at the base. Fl. nearly sessile, in a smooth, leafy cyme of two branches. **a.** ? *Rocks and sand.* Br. Isl. w. Fr.

26. **hirsutum.** All Flowering-stem erect, nearly leafless. L. alternate, cylindrico-oblong, hirsute; those of the shoots crowded. Cyme terminal, few-flowered. Divisions of Cal. ovato-lanceolate, obtuse. **p.** 6. *Slaty rocks.* Auv. Pyr. Pdm. Cors. Nap. ✓

27. **album.** L Stem somewhat woody at base. L. oblong, cylindrical, obtuse, spreading, smooth, sessile. Pan. much branched, fastigiate. Pet. somewhat obtuse, (lanceolate, somewhat acute, Guss.) **p.** 6, 7. *Walls, rocks, and dry banks.* ✓

micranthum Bast. half the size of 27 ✓
leaves shorter. ~~[illegible]~~ erect. on barren stems

ii. *Flowers yellow.*

a. *Stems slender. All L. nearly equal.*

28. **amplexicaule.** DC Stem erect, branched at base. L. tereti-subulate, smooth, dilated at base into an amplexicaul membrane! Pet. 5–7, lanceolate, acute. **p.** 6. *Calc. rocks.* Sic. Nap. Mont Ventous. Cevennes. ✓

alpestre Vill All repens DC

29. **saxatile.** L. nearly terete, obtuse, sessile, not produced at the base. Cyme 2–5-flowered, hairless. Pet. ovato-oblong, obtuse, **p.** 7–8. *High rocks.*

30. **acre.** L Somewhat creeping. L. and Sepals ovoid, with a rounded protuberance at base. Cyme leafy, smooth. Pet. lanceolate, acuminate. *Plant very acrid.* **p.** 6. *Walls and dry.* ✓

✓ 31. **sexangulare** L. Flowering-branches erect. L. of creeping shoots in 6 or 7 rows, nearly cylindrical, adnate, spurred at base. Cyme smooth. Pet. lanceolate, acuminate. **p.** 7. *Walls and sandy ground. Very rare in England.*

b. *Stems stout. L. on flowering-branches gradually smaller, all adnate.*

✓ 32. **anopetalum** DC L. cylindrico-subulate, acute, mucronate; those of the barren shoots tiled. Cyme smooth. Segments of Cal. acuminate. Pet. lanceolate, acuminate, erect. **p.** 7, 8. *Open calc. rocks.* s. France. Switzerland. Italy. Sicily.

33. **rupestre.** L L. lineari-lanceolate, adnate; those of the barren shoots crowded at the end, closely tiled in five rows, 3-nerved. Cyme corymbose. Segments of Cal. elliptic, obtuse. Pet. 5–7, spreading. **p.** 7. *Calc. rocks.* Eng. Fr. Rh. *Koch joins this to the* S. elegans *of Lejeune.*

✓ 34. **altissimum.** Poir Stem somewhat woody at base. Flowering-branches erect. L. terete, acute. L. of barren shoots closely and irregularly tiled. Cyme branched, many-flowered. Divisions of Cal. ovate, acute. **p.** 5–7. *Stony.* mdt. Fr. s. It.

35. **forsterianum.** Sm L. lanceolate, somewhat 3-nerved, crowded at end of barren shoots, and spreading in a sort of rosette. Segments of Cal. elliptic. Pet. lanceolate, spreading. **p.** 6, 7. *Rocks.* Wales. Shrop.

36. **albescens.** Haw L. glaucous, subulate, scattered; those of branches thread-shaped. Fl. cymose. Segments of Cal. lanceolate. **p.** 7, 8. Suffolk."—SM. Italy, BERT. L. of radical shoots much more slender than in *S. reflexum.* —SM.

✓ 37. **reflexum.** L L. subulate, acute, convex on both sides; lower recurved; those of barren shoots scattered, similar to the others. Cyme smooth. Segments of Cal. ovate, somewhat acute (thickened at the summit, GODR.). Pet. lanceolate, spreading. **p.** 7, 8. *Walls, rocks, and sandy ground.*

✓ 38. **elegans** Lej "L. lineari-lanceolate, almost flat, dotted. Segments of Cal. flat, not thickened at the summit. *The Segments of Cal. are much shorter than in* S. reflexum. The L. more compressed, more cuspidate, and more prolonged at the base. **p.** 6, 7. *Sandy woods.* Lorraine."—GODRON. Maestricht, KOCH.

261. SEMPERVIVUM L

A. *Shrubby!*

1. **arboreum.** Stem erect, (2 *to* 3 *feet high,*) smooth. L. cuneato-spatulate, ciliate. Fl. in a branched, elongated thyrse. Pet. 18. **S.** 2, 3. *Rocks.* Sard.

B. *Flowers stellate. Petals* 12 *or more.*

2. **tectorum.** L L. of rosettes oblongo-obovate, acuminate, smooth, fringed. Pet. lanceolate, acuminate, entire, hairy on the edge, *purplish.* Hypogynous Scales short, convex, resembling glands. **p.** 7, 8. *Alpine rocks.* ✓

3. **Wulfeni.** Hoppe L. of rosettes oblongo-obovate, acuminate, smooth, fringed. Pet. linear, with subulate tip, *yellow.* Hypogynous Scales lamelliform, nearly square. **p.** 7, 8. *Very high rocks.* Tyrol.

4. **Funckii.** Braun L. of rosettes oblong, acuminate, glanduloso-pubescent on both sides, and fringed with long hairs. Fil. terete. Pet. lanceolate, acuminate, *pink.* Hypogynous Scales lamelliform, nearly square. Caps. broadly ovoideo-rhomboid. **p.** 7, 8. *Mountains.* Tyrol. Salzb. Carinthia.

5. **montanum** L L. of rosettes spreading, oblongo-cuneate, acuminate, glanduloso-pubescent on both sides and fringed. Stem-L. obovato-oblong, erect. Pet. lanceolato-subulate, very acute, *lilac.* Fil. erect, terete. Germen obliquely lanceolate. Hypogynous Scales erect, lamelliform, nearly square. **p.** 7, 8. *Very high, dry, rocks.* Alps. ✓

6. **Braunii.** Funk L. of rosettes oblongo-cuneate, acute, glanduloso-pubescent on both sides, somewhat fringed. Upper L. of stem ovato-lanceolate, spreading. Pet. lineari-lanceolate, acuminate, *yellowish, with green stripes.* Fil. compressed at base. Germen obliquely lanceolate. Hypogynous Scales lamelliform, nearly square. **p.** *Snowy rocks.* Carinthia.

7. **arachnoideum.** L L. of rosettes obovate or oblong, acute, glanduloso-pubescent, setoso-ciliate, bearded at top. Hairs arachnoid, radiating, connecting the tops of the L.! Pet. oblongo-lanceolate, acuminate, *pink.* **p.** 7, 8. *High rocks.* Alps. Pyr. &c. ✓

C. *With offsets. Flowers campanulate. Petals not more than* 6.

8. **hirtum.** L L. of rosettes oblongo-lanceolate, acute, ciliate. Stem-L. cordate, acuminate, hairy. Stem and tips of Pet. hairy. **p.** 7, 8. *Mountain rocks.* Austria.

arverniense. Lecoq & Lamotte.
between 2 & 5. rosettes & pubes. of 5—
hypogynous scales & leaves of 2 & flowers
half the size.

9. **soboliferum.** Sims L. of rosettes oblongo-cuneate, acute; those of the stem oblong, acuminate; uppermost ovate: all smooth and ciliate. **p.** 7, 8. *Mountain rocks.* G.

10. **arenarium.** Koch L. of rosettes lanceolate; lower L. of stem ovato-oblong; upper triangular: all ciliate, but smooth on both sides. Fl. *yellowish.* **p.** 7, 8. *Woods.* Tyrol.

XLIV. FICOIDEÆ. DC

Calyx 5–8-partite, coloured within when there are no Petals, otherwise green. Stamens inserted on Calyx. Anthers oblong, incumbent. Stigmas several. Fruit of many cells, opening stellately at the summit. Seeds fixed at the inner angle of the cells. L. fleshy.

262. MESEMBRYANTHEMUM. L

1. **nodiflorum.** L Herbaceous, branched, nearly erect. L. papillose, opposite and alternate, terete, obtuse, ciliate at base. Fl. axillary, nearly sessile. Divisions of Cal. very unequal, exceeding the very small petals. **a.** 6, 7. *Dry barren coasts.* Netturo. K. Nap. Sic. Cors.

2. **crystallinum.** L Branched, procumbent, everywhere covered with transparent papillæ. L. flat, ovate, alternate, amplexicaul, undulate. Fl. axillary, nearly sessile. **a.** (**b.** ?) 5. *Maritime rocks.* Gallipoli. Tarentum. Sic. *Cult. in Sicily with* Salsola Soda.

263. AIZOON.

✓ 1. **hispanicum.** Papillose, hairless. Stem erect. Branches dichotomous. L. lanceolate. Fl. solitary in the forks, on short stalks. **a.** 4, 5. Between Capes Capo d'Armi and Spartivento in Calabria.

264. GLINUS.

1. **lotoides.** Herbaceous, tomentose. Stem prostrate. L. obovate, unequal, on long stalks. Fl. crowded, axillary. Stalks 1-flowered. **a.** 9, 10. *Moist.* Cat. Sard. ✓

265. REAUMURIA.

1. **vermiculata.** L. semiterete, full of pores, shorter on the branches, and crowded. Fl. solitary, terminal. Beard of Seed bristly. **S.** 7, 8. Agrigentum.

XLV. CACTEÆ. DC

Calyx superior. Sepals in many series, gradually passing into petals. Stamens numerous, inserted on a disc which covers the top of the germen. Style 1. Stigmas many. Fruit fleshy, of 1 cell. Seeds attached to parietal placentas. Plant shrubby, fleshy. *Stem jointed.*

266. OPUNTIA. Tourn

1. **vulgaris.** Mill Creeping, diffuse. Joints elliptic. Prickles uniform, short, numerous, setaceous. *Fl. yellow.* **w.** 7. *Warm open rocks.* It. Vall.

2. **amyclæa.** "Erect. Joints elliptic, very broad, flat. Pr. stout, diverging, nearly terete. Wool obsolete. **w.** *Calc. rocks.* Portella, near Monticelli. K. Nap."—Ten. Sicily, *if* O. maxima *of Gussone be, as I suppose, the same.*

3. **Ficus-indica.** Erect. Joints ovato-oblong. Pr. short, setaceous, as long as the wool. **S.** 5, 6. *Calc. rocks of coast.* Sic. south of K. Nap. *Looking wild, but I believe really planted.*

XLVI. GROSSULARIÆ. D C

Calyx superior, regular, 4- or 5-cleft. Petals 4 or 5, on the calyx. Stamens 4 or 5, between the petals. Style 2–4-cleft. Fruit a berry of one cell and many seeds.

267. RIBES. L

A. *Prickly. Bearing Gooseberries.*

1. **Grossularia.** L Branches spreading. Stalks 1–3-flowered. Bracts close together. Cal. campanulate. Segments reflexed. *Fr. rough.* **s.S.** 4. *Walls, and rocky uncult.*

✓ *β. Uva-crispa.* L Fruit smooth.

B. *Without prickles. Flowers in Racemes. Bearing Currants.*

✓ 2. **alpinum.** L Rac. with glandular hairs, always erect. Bracts lanceolate, exceeding partial stalks. L. polished beneath. **s.S.** *Mountain woods.* n. Eng. Sc. Ger. Sic. Fr.

✓ 3. **nigrum.** L Rac. few-flowered, pubescent, pendulous, with a separate flower-stalk at base. Bracts subulate, falling short of partial stalk. **s.** 5. *Moist sandy thickets. occ.*

4. **petræum.** L Rac. somewhat hairy, at first erect; pendulous when in fruit. Cal. campanulate; the Segments spatulate, erect, ciliate. Bracts ovate, falling short of flower-stalks. (L. with triangular, acute lobes, Bab.) **s.S.** 5, 6. *Moist rocky woods.* Fr. G. Sw. ✓

5. **rubrum** L Rac. smooth, pendulous. Cal. nearly flat, hairless. Segments spathulate. Bracts ovate, falling short of flower-stalk. **S.** 5. *Moist woods, occ.* Cantal. *According to Bab.,* petræum, *and* spicatum *of Sm., are varieties of this.*

XLVII. SAXIFRAGACEÆ. Juss

Calyx 4- or 5-cleft. Petals 4 or 5. Stamens as many as Petals, or twice as many. Capsules of two carpels cohering by the inflexed sides or margins. Styles 2, persistent. Seeds numerous. Albumen fleshy.

268. SAXIFRAGA. L

Sect. I. Calyx almost superior. Shoots perennial. Stigmas bearded.

A. L. opposite, thickened and pitted at top. Sp. 1–5.

B. L. alternate, with a marginal row of operculate pits.

- **i.** Shoots forming rosettes of lingulate L.
  - **a.** L. of rosettes serrate or crenate. Sp. 6–11.
  - **b.** L. of rosettes quite entire. Sp. 12–17.
- **ii.** Shoots ending in tufts of 3-edged L. Sp. 18–24.

C. L. without marginal pits, alternate on trailing shoots.

- **i.** L. or Divisions rounded at the end. Sp. 25–31.
- **ii.** L. or Divisions with parabolic terminations.
  - **a.** Shoots very short. L. almost all radical. Sp. 32, 33.
  - **b.** Shoots lengthened.
    - * L. 3–5-cleft. Lobes entire. Sp. 34–38.
    - ** L. 3-cleft. Lobes 3-cleft. Sp. 39–41.
- **iii.** L. or Divisions very acute, cuspidate.
  - **a.** L. entire. Sp. 42–44.
  - **b.** L. more or less divided. Sp. 45–48.

D. L. without marginal or terminal pits. No trailing shoots. Two unequal Bracts. Sp. 49–51.

Sect. II. Calyx about one-half superior.

E. L. quite entire. Shoots trailing. Sp. 52.

F. L. incise or crenate, no trailing shoots.

- **i.** Stems naked. Sp. 53, 54.
- **ii.** Stems leafy. Sp. 55–58.

Sect. III. Calyx inferior.

G. Stem leafy. No trailing shoots. Sp. 59–61.

H. Stem naked. No trailing shoots. Calyx reflected.

- **i.** Filaments subulate. Sp. 62, 63.
- **ii.** Filaments clavate. Sp. 64–68.

I. L. narrow, entire, on trailing shoots. Sp. 69–71.

I am afraid the student will not at first find all these divisions intelligible, especially as to the forms of the terminations of the L. in division **C.** I am persuaded, however, that as he proceeds in examining a number of species, he will obtain a distinct idea of each, in spite of occasional deviations from the artificial character.

SECT. I. *Calyx almost superior. Shoots perennial.*

A. *L. small, fleshy, mostly opposite, thickened at the tip, and there marked with one or three pits.*

1. **oppositifolia.** L Fl. solitary. Cal. ciliate, but without glands. L. triquetro-carinate. **p.** 5, 6. *Very high rocks.* Br. Alps. Pyr.

2. **Rudolphiana.** Horn Fl. solitary. Cal. glanduloso-ciliate. L. obovate, obtuse, with a single terminal pit. **p.** 7, 8. *Very high,* on the Kalserthörl near Heiligenblut.

3. **biflora.** All Fl. in heads of 2 or 3. Cal. glanduloso-ciliate. L. obovate or spatulate, with a single terminal pit. Stamens about as long as the separate lanceolate petals. **p.** 7, 8. *Snowy.* Alps and Pyr.

4. **Kochii.** Hornung Fl. in heads of 2 or 3. Cal. glanduloso-ciliate. L. spatulate. Stamens not half as long as the oblong contiguous petals. **p.** 7, 8. *Snowy.* s. Alps of Sw.

5. **retusa.** Gouan Fl. 1–4. L. obovate, triquetro-carinate, with three dots on the terminal plane. **p.** 7, 8. *Snowy.* w. Alps. Pyr.

B. *L. alternate, undivided, fleshy, with a marginal row of operculate pits.*

i. *Shoots forming rosettes of lingulate L.; ciliate at base.*

a. *L. of Rosettes serrulate or crenate.*

6. **Cotyledon.** L L. somewhat obtuse. Margin with acuminate serratures. Stem branched from below middle, forming a pyramidal panicle. Branches 5–15-flowered. Pet. cuneate. **p.** 7, 8. *High granitic* dividing chain of Alps. Pyr.

7. **Aizoon.** Jacq L. somewhat obtuse. Margin with acuminate serratures. Stem branched at top. Branches 2–3-flowered. Pet. nearly round. **p.** 7, 8. *Mountain rocks.* Alps. Vosges. Boh. Kreuznach. s. Fr. It.

8. **florulenta.** "Root-L. lanceolate, mucronate, ciliate. Stem-L. linear. Stem hollow, flowering from base, and forming a thyrsoid raceme. *Mountains* of Nice."—DC. *Not noticed by Duby or Bert.*

9. **longifolia.** Lap L. of rosettes crenate, linear, very long (*six inches*). Stalk branched from below middle, and forming a many-flowered, pyramidal, glandular panicle. Pet. oval. **p.** 7, 8. *High rocks and stony.* Pyr.

10. **elatior.** Koch L. of rosettes crenate, linear, not very long (*two inches*). Stalk branched at top. Branches long, naked, corymbose at top, 6–12-flowered. Pet. obovate. **p.** 7, 8. *Rocks and stony.* s. Alps.

11. **cochlearis.** L. of rosettes crenate, subrotundo-spatulate. Rac. long. Branches secund, 1–2-flowered. Cal. glandular. Pet. obovato-oblong. **p.** 5, 6. Portofino in Liguria.

b. *L. of Rosettes entire.*

12. **marginata.** L. of rosettes obovato-spatulate, hairless. Fl.-stalk glanduloso-pubescent. Corymb simple, diffuse. Pet. obovate, 5-nerved, twice as long as calyx. **p.** 6. *High rocks.* St. Angelo. Majello.

13. **lingulata.** Bell L. lineari-lingulate, somewhat obtuse. Fl.-stalk branched from about middle: that and the Cal. without hairs or glands. Rac. long, secund, compound, many-flowered. Pet. cuneate. **p.** 7. *Calc. mountains.* Italy s. of Apenn.

14. **crustata.** Vest L. linear, obtuse. an. glandular. Branches 1–3-flowered. Pet. obovate. **p.** 7, 8. *Very high.* Tyrol. Carinthia. Carniola.

15. **mutata.** L L. obtuse. Margin entire or obscurely serrulate at the end. Pan. racemose. Pet. lineari-lanceolate, acute. **p.** 6, 7. *Moist rocky.* Alps. Pyr. ✓

16. **porophylla.** L. spatulate, rounded at top, sometimes with an apiculus. Fl.-stalk densely villous, glandular. Rac. terminal, simple, few-flowered. Cor. shorter than calyx. **p.** 5, 6. Abruzzi. Lucania.

17. **media.** Gouan Stems, Cal., and Stalks viscid, with glandular hairs. L. spatulate, apiculate. Pan. somewhat corymbose. Fl. distant. ✓ Pet. broadly obovate, somewhat crenulate. Cal. exceeding corolla and stamens. **p.** 6, 7. *High calc. rocks.* Pyr."—DC. Lestib. jun ambigua

ii. *Shoots ending in tufts of 3-edged L.*

18. **Burseriana.** L L. of shoots erect, subulate, finely acute, with rigid mucro. Marginal Pits 7. Flowering-stalk glandular. Fl. mostly solitary. Pet. subrotund, crenulate, with many straight nerves. **p.** 6, 7. *Calc. rocks.* e. Alps.

19. **Vandellii.** Sternb. L. of shoots erect, ovato-lanceolate, acute, with rigid mucro. Marginal

Pits 5. Flowering-stalk densely villous, glandular, (few-flowered, Koch), (many-flowered, Bert.) Pet. oval, with five straight nerves. **p.** 6, 8. *High rocks.* Alps of Tyr. and of n. e. It.

20. **patens.** Gaud L. of shoots lineari-oblong, acute, widely spreading, somewhat recurved at top. Marginal Pits 7. Flowering-stalk 2–6-flowered, with scattered glandular hairs. Pet. 3-nerved; lateral nerves curved. **p.** 7. *Mountain rocks.* Fouly, Sw. Mittenwalde, Tyr. *L.* 2–4 *times larger than in* cæsia. *Fl. yellowish.*

21. **squarrosa.** Sieb L. of shoots lineari-lanceolate, obtuse with mucro, recurved at the top. Marginal Pits 7. Stalk 2–6-flowered, with scattered glandular hairs. Nerves of Pet. straight. **p.** 7, 8. *Mountains.* Tyrol. *rare.*

22. **cæsia.** L L. obtuse; those of Shoots somewhat acute, with thick but not cartilaginous margin. Pits 7, *regularly disposed.* ✓ Flowering-stalk 2–6-flowered, nearly smooth. Pet. 3–5-nerved; lateral nerves curved. *Fl. white.* **p.** 6, 7. *High.* Alps. Pyr. Apen.

β. *valdensis.* Pits numerous, irregularly disposed.

23. **aretioides.** Lapey L. of shoots erect, somewhat acute, lineari-spatulate. Flowering-stalk covered with viscid hairs. Corymb dense, few-flowered. Pet. *golden,* crenulate, with several straight nerves. **p.** 6, 7. *Very high, rocks.* Pyr.

β. *luteo-purpurea.* Lap Cal. purple. L. longer.

24. **diapensoides.** Bell L. of shoots erect, or slightly recurved at top, lineari-oblong, obtuse. Marginal pits 7. Flowering-stalk 2–5-flowered, densely covered with viscid hairs. Pet. *white,* ✓ obovate, attenuate, entire, with many straight nerves. **p.** 6, 7. *Very high.* St. Bernard. Cenis. Monte Rosa. Maritime Alps.

C. *L. membranous, without marginal pits, alternate, on trailing shoots. Ciliæ articulate.*

i. *L. or their divisions rounded at the end.*

a. *All entire.*

25. **Facchinii.** Koch L. tiled, linear, or somewhat lanceolate, attenuate, 3–5-nerved, *and* ✓ *whitish* when dead. Stem with several L. and 1–3 flowers. Pet. attenuate, 1-nerved, hardly exceeding calyx. **p.** 7. 8. *Very high.* s. e. Tyr.

26. **planifolia.** Lapey L. tiled, somewhat lanceolate, attenuate, 3-nerved when dead, *and* ✓ *grey at top.* Stem with several L., 1–5-flowered. Pet. rounded at base, 3-nerved, twice as long as divisions of calyx. **p.** 7, 8. *Very high, rocks.* s. Alps.

27. **glabella.** L. tiled, linear or spatulate, smooth; all brown when dead. Stem smooth. Partial Fl.-stalks and Cal. downy. Pet. broadly obovate, 5-nerved, three times as long as divisions of calyx. "Seeds black and prickly," DC. **p.** 7, 8. *Very high.* Monte Cornu. Monte Majello.

b. *L. more or less divided.*

28. **muscoides.** Wulf L. of shoots entire; of Rosettes and Flowering-stem entire and 3-cleft. Segments pointing forward. Pet. spreading, sessile, exceeding calyx. **p.** 6, 7. *High rocks.* ✓ Alps. Pyr.

β. *moschata.* Covered everywhere with glandular hairs.

γ. *crocea.* Pet. bright yellow.

δ. *secunda.* Very villous. Fl. secund.

ε. *atropurpurea.* Pet. deep purple.

29. **stenopetala.** Gaud Shoots and rosettes sparingly furnished with entire and 3- and 5-cleft L. Flowering-stalks leafless, 1-flowered. ✓ Pet. linear, acuminate, much narrower than divisions of calyx. **p.** 7, 8. *Very high.* e. Alps.

30. **exarata.** Vill L. furrowed when dry: those of shoots entire and 3-cleft; of rosettes 3–5-cleft. Pet. oval or oblong, sessile, spreading, ✓ twice as long as divisions of calyx. **p.** 6, 7. Alps. Pyr.

β. *pubescens.* L. pubescent, somewhat viscid.

γ. *intermedia.* Lax and straggling.

31. **pentadactylis.** Lap L. rigid, somewhat gummy; nearly all 5-cleft. Pet. oblongo-obovate, two or three times as long as the lanceolate, acute, nearly erect divisions of calyx. **p.** 7, 8. *Very high.* e. Pyr.

nervosa

ii. *Termination of L. parabolic, hardly acute, but sometimes ending in a fine point, which disappears in the old L.*

a. *Shoots very short, so that the L. appear radical.*

32. **Seguieri.** Spr L. spatulato-lanceolate, attenuate into haft; entire or ending in three teeth, 5–7-nerved when dry. Flowering-stems with about one L. and one flower. ✓ Pet. oblongo-linear, narrower than divisions of calyx. **p.** 7–8. *Snowy.* On the main chain of the Alps in Sw. Pdm. and Tyr. Monte Baldo.

33. **androsacea.** L Root-L. tufted, spatulato-lanceolate, attenuate into haft; entire or ending in three teeth, 5–11-nerved when dry. Flowering-stems with about 1 L. and 2 flowers.

Pet. obovate, twice as wide as divisions of calyx. **p.** 7, 8. *Moist, stony.* Alps. Pyr. Apen.

β. *depressa.* Pet. hardly exceeding calyx.

b. *Shoots lengthened.*

* *L. 3–5-cleft. Lobes entire.*

34. **cæspitosa.** L Haft of L. flat, with no distinct furrows. Pet. oval, sessile, twice as long as obtuse divisions of calyx. (According to Koch, the L. have sometimes seven, or even nine divisions.) **p.** 5, 6. *Rocks and stony.* Mountains of Wales. Irel. Ger.

β. *grœnlandica.* L Viscid, densely tufted.

γ. *decipiens.* Large and lax, with larger flowers.

35. **capitata.** Lap "Stems prostrate, hardly hairy. L. cuneate, trifid, somewhat fleshy, nerved, crowded at the top of the barren shoots. Lobes ovate, nearly parallel. Segments of Cal. ovato-lanceolate, somewhat obtuse, (acute, Duby,) as long as tube when in flower. Pet. ovate, far exceeding calyx. Styles very long, nearly parallel in the flower, spatulate. **p.** Pyr." —DC.

36. **hirta.** Sm "L. 3–5-cleft. Lobes lanceolate, pointed. Pan. loose, about 3-flowered. Pet. obovate, 3-nerved. Divisions of Cal. ovate, acute. **p.** 7. *High.* Brandon Hill, Kerry. Gallymore, Tipperary."—Bab. *The figure in Eng. Bot. has induced me to place this here.*

37. **elongella.** Sm "Root-L. 3–5-cleft: those of shoots undivided or 3-cleft; all bristle-pointed and slightly ciliate. Primary Fl.-stalks very long, simple, naked. Cal. pointed. Pet. obovate. **p.** 6. *Moist rocks.* Angus-sh."—Sm. *This also I place here, guided by the figure in Eng. Bot.* D of G.S. 1806.

38. **pedatifida.** Sm. L. 5–7-cleft. Central Lobe sometimes with three teeth. Haft two to three times as long as blade. Divisions of Cal. lanceolate, mucronate. Pet. narrow, spatulate. **p.** 7, 8. *High rocks.* Sw. Pyr. Mountains of Clova. D of W. Arnott.

** *L. 3–5-cleft. Lobes 3-cleft.* petraea Gunn

39. **adscendens.** L Stem firm, ascending, pubescent. L. thick, cuneate, palmate, 3–5-partite. Lobes broad, trifid. Segments of Cal. ovate, acute. Pet. obovate, many-nerved, far exceeding calyx. **p.** 6, 7. *Banks of streams.* Pyr.—DC.

40. **pedemontana.** All L. cuneate, 3–5-cleft, inciso-dentate, (nerved when dry.) Lobes porrect. Stem naked, corymbose. Lower L. of flower-stalk triangulari-cuneate, 5–7-fid. Pet. oblong, contracted into a claw, twice as long as linear divisions of calyx. **p.** 7. *Very high.* Monte Rosa. Pdm.

41. **geranioides.** L Covered with viscid hairs. Root-L. reniform, palmato-3–5-cleft. Lobes many-cleft. Haft two to three times as long as blade. Segments of Cal. lineari-lanceolate, always longer than tube. Pet. obovato-oblong, flat, far exceeding lineari-lanceolate divisions of calyx. **p.** *Shady rocks.* Pyr.—DC. ✓

iii. *Termination of L. very acute, cuspidate.*

a. *L. entire.*

42. **tenella.** Wulf L. lineari-subulate, with a membranous margin and scattered fringe of weak bristles. Divisions of Cal. triangular, cuspidate. **p.** 6, 7. *Mountain rocks.* Sty. Carniola. Friuli. *rare. There are sometimes axillary tufts of L., as in* S. aspera *and* S. hypnoides, *to the former of which it seems nearly allied.*

43. **sedoides.** L L. lanceolate. Stem leafless, 1–3-flowered. Pet. ovate, acute, shorter and narrower than divisions of calyx. **p.** 7, 8. *Mountain rocks.* Alps from Grisons to Styria.

44. **Hohenwartii.** Stern L. lanceolate. Stem 1–3-flowered, with alternate L. Pet. ovate, acute, as long as divisions of calyx. **p.** 7, 8. *Mountain rocks.* Carinthia. Sty. Carniola.

b. *L. more or less divided.*

45. **hypnoides.** L L. of shoots entire and 3-cleft; of flowering-stem and rosettes 3–5-cleft. Haft inflated, semiterete.—Koch. Margin of L. in axillary bundles; generally membranous, and connected by a sort of web. **p.** 6. *Rocks and stony.* Irel.? Mountains of Br. Cev. Auv. Calc. mountains of s. of Fr. ✓

46. **sponhemica.** Gmel L. of shoots 3-cleft; of rosettes and flowering-stem flat, even, or with one indistinct furrow. Stalks 3–9-flowered. Pet. obtuse, sessile, twice as long as triangular or parabolic, acute divisions of calyx. **p.** 5, 6. *Rocky hills.* Palat. *rare.* ✓

47. **affinis.** Don L. of shoots 3-cleft; of rosettes and flowering-stems 3–5-lobed. Fl. 2–4. Divisions of Cal. subulate, acute. Pet. oblong, 3-nerved. Margin inflexed. **p.** 7. *Summit of Brandon Mountain.*—Bab.

48. **ajugifolia.** L Nearly all L. 5-cleft. L. smooth, cuneato-petiolate, 3–5-fid. Segm. lanceolate, acute. Stalks axillary, ascending, with few flowers and few L. Upper L. linear, undivided. Divisions of Cal. lanceolate, some- ✓

what acute, about half as long as the elliptico-ovate, obtuse petals. **p.** 7. *Snowy.* Pyr."—DUBY.

[illegible]

D. *No side-shoots. Stem leafy. L. without marginal Pits. Plants annual. Two Bracts to Flower-stalks.*

49. **controversa.** Stern Stem solitary, erect. Branches 3-flowered at top. Partial stalks ✓ about as long as fruit. L. cuneate, with 3–5 porrect (terminal ?) teeth : those of root crowded; the first spatulate, entire. **a.** 6, 8. *Rugged mountains.* Alps. Apen.

50. **tridactylites.** L Stem solitary, erect. Stalks 1-flowered, much longer than fruit. Root ✓ L. obovato-spatulate, entire or 3-lobed, on a long haft. Stem-L. trifid, alternate. Root simple. **a.** 4, 5. *Walls and dry places.*

51. **petræa.** L Stem solitary, decumbent, loosely panicled. Stalks 1-flowered, much longer than fruit. L. palmato-trifid, laciniato-dentate. Lobes acuminate. Stalks of the lowermost channeled. Pet. obovate, twice as long as calyx. **a.** 5, 6. *Moist stony.* Pyr. Dau. Carniola. n. It.

SECT. II. *Calyx about semisuperior.*

E. *L. entire. Shoots trailing.*

52. **aizoides.** L Shoots and Flowering-✓ stems ascending, leafy. L. linear, with a fringe of bristles, convex beneath. Divisions of Cal. blunt and pointless. Fl. *bright yellow.* **p.** 7, 8. *Moist mountains.*

β. *atrorubens.* Smaller. L. more rigidly ciliate. Fl. dark crimson.

F. *L. crenate or incise. No trailing Shoots. No marginal Pits.*

i. *Stems naked. L. all radical.*

53. **nivalis.** L L. obovate, attenuate into haft, unequally dentato-crenate. Head 5–8-✓ flowered, somewhat corymbose. Cal. erect. Pet. oblong, obtuse. **p.** 7. *Mountain rocks.* Sligo. Sc. Auv. Riesengebirge.

54. **hieracifolia.** Koch L. ovato-oblong, attenuate into haft, remotely repando-dentate. Rac. somewhat compound. Cal. of Fr. reflexed. Pet. ovate, acute. **p.** 7, 8. n. w. slope of the Lantscher Alp near Gratz, and on the Wand near Schladming, Styria ?

ii. *Stems leafy.*

55. **granulata.** L Stem erect, few-leaved, ✓ branched at the top. Root-L. reniform, lobato-crenate, on a channeled stalk. **p.** 5, 6. *Open gravelly.*

56. **bulbifera.** L Stem erect, with numerous small L., quite simple. Cyme terminal, trifid, 3–7-flowered. Root-L. reniform, lobato- ✓ crenate, stalked; upper L. sessile, linear, entire. **p.** 5, 6. *Grassy hills.* s. e. G. Apen.

57. **rivularis.** L Stem ascending, nearly simple. Root-L. palmate, with roundish lobes. Stem-L. lanceolate, entire, all stalked. Fl. few, ✓ generally on long stalks. **p.** 8. *High moist rocks.* Sc.

58. **arachnoidea.** Stern Stem procumbent. L. subrotundo-obovate, attenuate, ending in 3 or 5 very short and very obtuse lobes. **p.** 7, 8. *Shady rocks.* Valle d'Ampola in s. Tyrol. Rocks of Dos Alto in the Brixen.

SECT. III. *Calyx inferior.*

G. *Stem leafy. No trailing Shoots.*

59. **cernua.** L Stem erect, nearly simple, with one terminal flower. Root-L. reniform, 5–7-lobed, stalked. Upper stem-L. sessile, ✓ incise at base; uppermost lanceolate, entire. Axils bulbiferous. **p.** 7, 8. *High moist rocks, rare.* Sc. Vallais. Sty.

60. **rotundifolia.** L Stem erect. Pan. many-flowered. Root-L. cordato-reniform, coarsely and unequally crenate, on long-stalks. ✓ Stem-L. inciso-dentate. Pet. lanceolate. **p.** 6, 8. *Moist shady hills.* Alps. s. Fr. It.

Willd

β. *repanda.* Crenatures obtuse, with acumen.

61. **parviflora.** "Stems slender, erect, and diffuse. Root- and lower Stem-L. stalked, reniform, 3–5-lobed; upper sessile, nearly entire. Flower-stalks long, at length widely spreading, opposite the L. Pet. elliptic, with short claws, hardly exceeding the calyx. Germen superior, free. **a.** 3, 5. *Moist rocks and walls in elevated places.* Sic."—GUSS. *Bertoloni refers this to* S. hederacea, *Linn., and says that the calyx is attached to the base of the germen.*

H. *Stem naked. No trailing shoots. Calyx reflected.*

i. *Filaments subulate.*

62. **stellaris.** L L. obovato-cuneate, nearly sessile, dentato-serrate at top. Scape corymbose. ✓ Pet. lanceolate, all tapering into claws. **p.** 7, 8. *Wet mountains.*

63. **Clusii.** Gouan L. oblongo-cuneate, stalked, dentate from middle. Scape corymbose. Three ✓

Pet. abruptly clawed. **p.** 7, 8. *High moist.* Tyrol. Pyr. v of 62 Gr v G.

ii. *Filaments clavate.*

64. **cuneifolia.** L L. subrotundo-obovate, very obtuse, repando-crenate, on a flat, cuneate, hairless haft. **p.** 6, 7. *Shady rocks.* Cev. Pyr. s. Alps. Apen.

65. **umbrosa.** L L. obovate, somewhat retuse. Haft flat, linear. Margin ciliate. Scape panicled. **p.** 7, 8. *Moist rocks.* Irel. Pyr. Corsica.

Mac.

66. **elegans.** "L. round, smooth, shining, acutely serrate, not tapering into the broad plano-convex stalks. Pan. racemose. **p.** 6. Top of Turk Mountain at Killarney."—BAB.

hyb.

67. **hirsuta.** L L. oval, somewhat cordate, acutely serrate, hairy on both sides, slightly tapering into a long, semiterete, channeled stalk. **p.** 6. *Moist rocks.* w. Irel. Pyr. v of 68. hyb.

68. **Geum.** L L. reniform, acutely crenate, hairy on both sides, on a long, villous, semiterete, channeled stalk. **p.** 5, 6. *Moist shade.* Irel. Pyr.

I. *Leaves entire, on trailing Shoots. Ciliæ not jointed.*

69. **Hirculus.** L Shoots prostrate, filiform. Stalk ciliate, with slender hairs. L. lanceolate. Flowering-stems erect, leafy. Cal. refracted. Pet. many-nerved, with 2 calli at base. **p.** 7, 8. *Peaty meadows and heaths.* Scot. Yorksh. Jura. n. Ger.

70. **aspera.** L Shoots prostrate. L. lineari-lanceolate, awned and spinuloso-ciliate. Stem-L. remote, spreading. Gemmæ half as long as L. Cal. spreading. Segm. somewhat mucronate. **p.** 7, 8. *Stony mountain valleys.* Auv. Pyr. Alps. n. Apen. ✓

71. **bryoides.** L Shoots prostrate. L. lineari-lanceolate, awned and spinuloso-ciliate. Stem-L. approximate. Gemmæ as long as L. Cal. spreading. Segm. somewhat mucronate. **p.** 7, 8. *Very high dry stony.* Alps. Pyr. Lig. ✓ v of 70 Gr v G.

269. ZAHLBRUCKNERA. Rch

1. **paradoxa.** Rch Procumbent. Lower L. cordato-reniform, 5–7-lobed. **p.** 7, 8. *Moist rocks* between Wolfsberg and Wiesnau in Carinthia. Styria. ✓

270. CHRYSOSPLENIUM. L

1. **alternifolium.** L L. alternate; lower somewhat reniform, somewhat doubly crenate. **p.** 3, 4. *Moist shade, occ.* ✓

2. **oppositifolium.** L L. opposite, cordato-subrotund (subcuneato-reniform, DC.), simply crenate. Caps. shorter than calyx. **p.** 4, 5. *Shady rills.* ✓

3. **ovatifolium.** L. ovate, obtusely serrate. Stem-L. opposite. Caps. cloven, twice as long as calyx. Valves acute, somewhat divergent. **p.** 3, 4. Aspramonte in Calabria.

XLVIII. UMBELLATÆ.

Germen inferior, splitting at last into two seeds, each of them surmounted by a style. Petals 5. Teeth of Calyx 5, sometimes wanting. *Lagœcia* is the only European genus which has but 1 style, with a slight indication of a second seed; and in *Echinophora*, and occasionally in a few others, only one seed is perfected. The Flowers are mostly in umbels; but in *Eryngium* they are in Heads; and in the first tribes, and in some scattered species, the umbel is not perfectly developed. The Tribes are explained in the Analysis of the Genera in *Pentandria Digynia*, to which all the species of this work belong.

Tribe I. *ERYNGIEÆ.*

271. ERYNGIUM.

A. *Root-L. on a long stalk. Outline deeply cordate.*

i. *Root-L.* 3–5-*partite, and further divided.*

1. **Bourgati.** Root-L. nearly circular, palmato-3-partite. Segments inciso-pinnatifid; lower part of each segment quite entire. Stalk of lower stem-L. short, not sheathing, quite entire. Bracts 10–12, with 1 or 2 teeth on each side; exceeding the ovate head. Pales entire. **p.** 9. *Open.* Pyr.

2. **amethystinum.** Root-L. pinnatipartite. Segments inciso-pinnatifid. L.-stalks sheathing, quite entire at the base. Stem corymbose, *coloured in the upper part.* Bracts 7–8, with a few teeth at the base, exceeding the globose head. Pales mostly entire. **p.** 9, 10. *Dry hills.* s. Tyrol. n. e. It. Trieste. Tivoli. ✓

3. **dilatatum.** Root-L. pinnatifid. Segments incise, spinescent. Lower stalks spinoso-ciliate down to base. Bracts 5–7, spinoso-dentate, exceeding the globular heads. Pales tricuspidate. **p.** Tuscany.

✓ 4. **Spina-alba.** Root-L. 3–5-partite. Segments pinnatifid, incise, and inciso-pinnatifid. Hafts of lower L. entire; of upper inciso-pinnatifid. Bracts 9, 10, pinnatifid, about equal to the cylindrical head. Pales tripartite. **p.** 8, 9. *Calc. mountains.* Provence. Dauphiny.

✓ 5. **campestre.** Root L. tripartito-bipinnatifid, incise. Auricles of stem-L. lacerato-dentate, amplexicaul. Bracts nearly entire, exceeding the subglobose heads. Pales entire. **p.** 7–9. *Dry.* m. and s. Europe.

6. **triquetrum.** “Stem erect; upper part and branches 3-edged. All L. trifid; lower cordate, with broad lobes. Stalk sheathing. Bracts 3–4, quite entire. Pales entire. **p.** 5–7. *Clayey hills.* Sic.”—Bert. (Root-L. tripartite, Guss.)

ii. *Root-L. undivided and 3-lobed, or all 3-lobed.*

✓ 7. **maritimum.** Root-L. stalked, nearly circular, cordate at base, 3-lobed, undulato-plicate, dentato-spinous; upper amplexicaul, palmate. Stalks twice as long as heads. Bracts 5–7, rigid, dentato-spinous. Pales tricuspidate. **p.** 7, 8. *Sandy shores.*

iii. *Root- and Lower L. all undivided.*

8. **tricuspidatum.** Lower L. orbicular, spinoso-dentate. Stem-L. palmato-laciniate. Stalk short, sheathing (entire?). Head-stalks very short. Bracts numerous, remotely spinous. All Pales tricuspidate. **p.** 6–9. *Stony hills.* Sic. Sard.

✓ 9. **alpinum.** Root- and Lower L. cordato-triangular, serrato-dentate; uppermost sessile, palmate, serrato-ciliate, subspinulose. Bracts 10–20, not rigid: outer pinnatifid; inner deeply serrato-ciliate, exceeding the oblong head. Pales tripartite. **p.** 7, 8. *Pastures.* Alps.

✓ 10. **planum.** Lower L. oval, crenate, flat; middle sessile, undivided; upper 5-partite, serrate. Bracts 6–7, remotely serrato-spinose, not much exceeding the globose head. Outer Pales tricuspidate. **p.** 6, 7. *Meadows.* Provence? s. e. Ger.

✓ 11. **dichotomum.** Root-L. oblong, spinoso-dentate. Stem-L. palmato-laciniate. Bracts remotely spinoso-dentate, twice as long as globose head. Outer Pales tricuspidate. **p.** 5, 6. *Clay hills and inundated plains.* Sic. Calabria.

B. *Root-L. lanceolate, gradually tapering into stalk.*

12. **pusillum.** Root-L. lanceolate, dentate or pinnatifid. Stem-L. sessile, palmate. Bracts exceeding the sessile heads. Base dilated into an oblong sheath. Pales entire. **p.** 5, 6. *Moist calc. clay.* Sic. Sard. Cal. ✓

Tribe II. *SANICULEÆ.*

272. HACQUETIA.

1. **Epipactis.** Root-L. ternate or tripartite. Bracts 5–6, obovate, toothed at the top, exceeding the umbel. **p.** 4–6. *Mountain woods.* Grisons. Carinthia. n. e. It. ✓

273. ASTRANTIA.

1. **minor.** L. digitate. Lts. 7–9, acute, unequally inciso-serrate. Bracts about equal to umbel. **p.** 7, 8. *Very high.* Alps. ✓

2. **pauciflora.** L. digitate. Lts. 5–7, entire, or with a few distant serratures. Bracts exceeding the umbel. **p.** 7, 8. *Very high grassy.* Alpi Appuane. Abruzzi.

3. **gracilis.** Root-L. tripartite. Segments unequally serrate: lateral bifid. Outermost divisions semiovate. Scales of the fruit conical, acute. **p.** Alps of Carniola.

4. **carniolica.** Root-L. palmato-partite. Segments 5, oblong, subtrifid, unequally inciso-serrate. Bracts 12–13, exceeding the umbel. **p.** 7, 8. *Alpine meadows.* Carinthia. Carniola. Friuli.

5. **major.** Root-L. palmato-partite. Segments 5–7, obovato-elliptic, subtrifid, unequally inciso-serrate. Bracts 15–20, sometimes 3-toothed at top, hardly exceeding umbel. **p.** 6, 7. *Mountains.* ✓

274. SANICULA.

1. **europæa.** Root-L. palmato-partite. Lobes trifid, dentate, perfect. Fl. sessile; barren on short stalks. **p.** 5. *Shade.* ✓

275. PETAGNIA.

1. **saniculifolia.** Root-L. on a long stalk,

somewhat peltate, 5-partite. Segments cuneate, with mucronate teeth. **p.** 5, 6. *Shady rills.* Boschi di Cannata, Sic.

Tribe III. *HYDROCOTYLEÆ.*

276. HYDROCOTYLE.

1. **vulgaris.** L. peltate, nearly circular, duplicato-crenate, 9-nerved. Umbels of about 5 sessile flowers. Fr. somewhat cordate at the base. Seed with 3 ribs. **p.** 5, 6. *Marshy.*

2. **natans.** L. cordato-reniform, somewhat peltate, irregularly 9–11-lobed, crenate. Umbel of about 5 flowers, not quite sessile. Seed keeled, with a single nerve. **p.** 4, 5. *Ditches and marshes.* Nap. Syrac. Sard.

Tribe IV. *AMMINEÆ.*

277. BUPLEURUM.

A. L. attenuate. Plant annual.
  i. Fruit tubercled. Sp. 1–4.
  ii. Fruit without tubercles. Sp. 5–10.
B. L. attenuate. Plant perennial.
  i. Herbaceous. Sp. 11–14.
  ii. Shrubby. Sp. 15–18.
C. Stem-L. broad at base, and somewhat amplexicaul. Plant perennial. Sp. 19–23.
D. L. perfoliate. Plant annual. Sp. 24, 25.

A. *Annual. L. attenuate.*

i. *Fruit tubercled.*

1. **tenuissimum.** Fr. subglobose, distinctly ribbed, nearly or quite sessile. Umbel simple, 3-rayed. Partial bracts 3–5, somewhat exceeding flower. Stem erect, branched from base. **a.** 8, 9. *Barren, grassy.*

2. **procumbens.** Fr. subglobose, distinctly ribbed. Stalks as long as fruit (fig. in 'Fl. Atl.'). Umbel 2–5-rayed. Partial bracts 5, hardly equalling flower-stems, tufted, procumbent. **a.** 8, 9. Calaris, Sard.

3. **glaucum.** Fr. subglobose, without vittæ and nearly without ribs, stalked. Partial bracts 5, lanceolate, cuspidate, serrulate on margin and sometimes on nerves, exceeding flowers. L. lineari-lanceolate. **a.** 4, 5. *Calc. coasts.* Narb. Mars. It.

4. **semicompositum.** Fr. oblong, without vittæ or ribs. Partial bracts lanceolate, cuspidate, quite entire. L. lanceolate: lower obtuse; upper cuspidate. **a.** 7, 8. *Fields.* s. Fr. Nice. Istr. Flor. K. Nap.

ii. *Furrows of Fruit without tubercles.*

5. **junceum.** Fr. ovato-oblong. Ribs acute. Vittæ 0. Umbel of 2 or 3 rays. Partial stalks half as long as fruit. Partial bracts lineari-lanceolate, falling short of fruit. L. lineari-lanceolate, cuspidate, 7-nerved. **a.** 8, 9. Auv. mdt. G. It.

6. **Gerardi.** Fr. lineari-oblong. Ribs filiform. Vittæ 0 (3, DC.). Umbel of about 5 rays. Partial stalks as long as fruit. Partial bracts 5–7, lanceolato-subulate, cuspidate, exceeding flowers. Branches spreading. L. lineari-lanceolate, acuminate, 3–5-nerved. **a.** 7–9. *Dry fields.* mdt. Fr. n. It. Aust.

7. **affine.** Fr. oval. Ribs filiform. Furrows with a somewhat prominent stripe. Umbel 2–5-rayed. Partial stalks half as long as fruit. Partial bracts lanceolate, acuminate, exceeding flowers. Secondary branches short, erect. L. lineari-lanceolate, acuminate, 3–5-nerved. **a.** 7. *Uncult.* Vienna.

8. **glumaceum.** Fr. oblong. Ribs acute. Furrows with a single stripe. Partial bracts 5, far exceeding flowers, elliptic, cuspidate, pellucid, 3-nerved, without intermediate veins. L. very narrow, 3-nerved. **a.** *Barren fields.* Calabria.

9. **Odontites.** Fr. oblong. Ribs acute. Furrows with a single stripe. Partial bracts 5, far exceeding flowers, aristato-cuspidate, pellucid and veinless beyond the lateral nerves. L. lineari-setaceous, 3-nerved. **a.** 4, 6. *Dry fields.* Cal. Sic.

10. **aristatum.** Fr. oblong. Ribs acute. Furrows with a single stripe. Partial bracts 5, far exceeding flowers, aristato-cuspidate, partly herbaceous, and veined beyond lateral nerves. L. spatulato-lanceolate: upper linear, acute, cuspidate, 3-nerved. **a.** 6, 7. *Dry hills.* m. and s. Eur.

B. *Perennial. Stem-L. attenuate towards the base.*

i. *Herbaceous.*

11. **cernuum.** "Erect. Branches flaccid, incurved. Root-L. oblong. Stem-L. linear, all flaccid, acute, 5-nerved. General involucre of about 3 L.; partial of 5; lineari-setaceous, very short, unequal. Umbels generally drooping before flowering. Fr. oblong, ribbed.

Furrows even, or somewhat striped. **p.** *Mountains.* Abruzzi. *Differs from* B. falcatum *by the compressedly 4-edged seeds, the linear L., and other marks.*"—Ten.

12. **exaltatum.** "Stem loosely panicled. Root-L. lineari-lanceolate, attenuate into stalk; upper linear, attenuate, all acute, with 5 nerves and intermediate veins. Umbels of 5–10 rays. Partial bracts lanceolate, acuminate, equalling the stalked fruit. Ribs narrowly winged. Stripes 3. **p.** 7, 8. On Mount Slavnik and other mountains of coast."—Koch. *Whether these differ from one another and from* B. falcatum, *the descriptions do not enable me to determine, and I have no specimens of decisive authority.*

13. **falcatum.** Fr. oval, about equal to stalk. Ribs thin, somewhat winged. Stripes 3. Partial bracts lanceolate, cuspidate, 3-nerved, equalling umbel. Lower L. elliptic, attenuate into stalks; uppermost lineari-lanceolate, finely acute. **p.** 8, 10. *Dry hills.*

14. **rigidum.** Fr. oblong. Ribs very thin. Stripe single. Umbel of about 3 rays. Bracts very small. Lower L. obovato-lanceolate, very attenuate, many-nerved; upper lanceolate, very small. **p.** 8. *Stony.* s. Fr., from Prov. to Narbonne. Mont Cenis.

ii. *Shrubby.*

15. **elatum.** Fr. oblong. Ribs acute. Umbel of 10–14 equal rays. Partial bracts 4–5, lanceolate, cuspidate, 5-nerved, exceeding umbel. Lower L. oblongo-lanceolate, stalked, attenuate; upper lanceolate, sessile: all many-nerved. **w.** 7, 8. *Cold calc. rocks.* Madonie alla Colma Grande.

16. **dianthifolium.** Fr. oblong. Ribs acute. Terminal Umbel of about 6 rays; lateral nearly simple. Partial bracts 5, shorter than umbel. Stems tufted. Lower L. crowded, lineari-lanceolate, 3-nerved; of flowering-branches few and short: all sessile, and sprinkled with white dots. **p.** 5, 6. Isl. Maretimo.

17. **fruticescens.** Fr. glaucous; the ribs hardly apparent. Partial bracts 5, linear, acute, reflexed, shorter than fruit. Rays 2 or 3. Bracts 3–5, subulate, very short. Stem tortuose. Branches (erect, DC.) (divaricate, Bert.). L. linear, rigid, acuminate, convolute. **w.** *Dry.* Between Narbonne and Perpignan.

ort. Bun

18. **fruticosum.** Fr. oblong. Ribs strongly raised (acute) Umbel of many equal rays. Bracts oblong,

Spinosum.

(unexpanded anthers & recurved ovary [illegible] alternately forming a ring round the [illegible] Carpels; (glauc. green & reticulate-veined

obtuse, deciduous. L. oblong, narr^d below, coriaceous, 1-nerved, quite entire, sub-sessile. **S.** 7, 8. *Dry calcareous.* mdt. Fr. Nice. Cors. Sicily.

C. *Perennial Herbs. Stem-L. broad at base, somewhat amplexicaul. Involucels full and flower-like.*

19. **ranunculoides.** Root-L. lineari-lanceolate. Stem-L. ovato-lanceolate, somewhat amplexicaul. Bracts about 3, unequal; partial 5, ovate, mucronate, nerved. Ridges of Fr. winged. Furrows with 1 stripe. **p.** 8. *High pastures.* Alps. Pyr. Jura. Apen.

β. *caricinum.* Root-L. somewhat convolute, lineari-subulate. Stem-L. hardly dilated at base. **p.** 8. *Open rocky.* Pyr. Apen.

20. **graminifolium.** Root-L. linear. Stem naked, or with 1 L. Partial bracts 5–8, oblong, mucronate. Ridges of Fr. winged. Furrows with a single very broad stripe. **p.** 7, 8. *Stony.* Alps. *occ.* Pyr.

21. **stellatum.** Root-L. lineari-lanceolate. Stem nearly naked. Partial bracts 8, united into a disc! Ridges of Fr. winged. Furrows with a single stripe. **p.** 7, 8. *Mountain meadows.* Alps. Cors.

22. **longifolium.** L. ovato-oblong: lower attenuate; upper cordate, quite amplexicaul. Partial bracts 5, ovate, somewhat acuminate. Ridges of Fr. filiform. Furrows with 3 stripes. **p.** 7, 8. *Mountains.* Fr. Ger. Sw. Sav.

23. **pyrenæum.** Root-L. lanceolate. Stem-L. cordato-lanceolate, amplexicaul. Partial bracts 5, obovate, exceeding flowers. Ridges of Fr. acute. **p.** 9. *Rocky meadows.* Pyrenees.

D. *Annual. L. perfoliate.*

24. **protractum.** Fr. tubercled. Stem-L. ovato-oblong, acuminate. Partial bracts 5, mucronate. Umbel about 3-rayed. **a.** 5, 6. *Fields.* s. Europe.

25. **rotundifolium.** Fr. smooth. Stem-L. subrotundo-ovate. Partial bracts 5, mucronate. Umbel 5–8-rayed. **a.** 6, 7. *Fields.*

278. CICUTA.

1. **virosa.** R. hollow, with transverse septs. Fibres cylindrical, verticillate. L. 2–3-pinnate (twice ternate, Sm.). Lts. lanceolate, serrate (decurrent, Sm.). **p.** 8. *Peaty ditches and streams.*

279. PTYCHOTIS.

1. **heterophylla.** Root-L. pinnate. Lts. roundish, inciso-serrate. Stem-L. multifid. Segments lineari-filiform. All the partial bracts setaceous. **b.** 7, 8. *Stony.* s. France. Savoy. Piedmont.

2. **verticillata.** All the L. multifid. Segments of root-L. lineari-cuneate, 2–3-cleft; of others capillary. Two of the partial bracts spatulate, cuspidate. **p.** 7. *Grassy.* Italy. Istria.

280. FALCARIA.

1. **Rivini.** Root-L. simple or ternate. Stem-L. ternate; the middle Lt. trifid, divided on one side to midrib. Segments linear. Serratures equal, regular. **b.** 7, 8. *Fields.* m. and s. Eur.

2. **latifolia.** L. ternate. Middle Lt. trifid. Segments of lower L. ovate, cuneate at base, deeply and unequally serrate. **b.** 6, 7. *Calc. hills.* On the mountain Zhaun, Carniola.

281. HELOSCIADIUM.

1. **stoloniferum.** "Stem striate, erect, solid, flexuose, stonoliferous at base. L. pinnate. Lts. 7–11, ovato- or oblongo-lanceolate, regularly acuminato-serrate; terminal obovate, cuneate at base (rarely cordato-ovate), somewhat 3-lobed. Umbels axillary, stalked. Involucre of 1 entire and often deciduous L. **p.** 4–7. *Mountain rills.* Madonie, Sicily."—Guss. *Not in Bertoloni.*

2. **nodiflorum.** Stem procumbent. L. pinnate. Lts. ovate, equally and obtusely serrate. Umbels sessile, or on short stalks opposite to L. Involucre of a single L., often wanting. **p.** 7, 8. *Water.*

3. **repens.** Plant with creeping runners, but no proper stem. L. pinnate. Lts. roundish, unequally and acutely inciso-serrate. Umbels opposite to L. Stalk longer than umbel. Involucre persistent, of 2 or 3 L. **p.** 8. *Moist peaty.* Fr. Valley of Rhine. *occ.*

4. **intermedium.** L. pinnate. Lts. somewhat verticillate, trifid. Root somewhat bulbous. Umbels stalked, 4–5-rayed, opposite L. Involucre of about 5 L. **p.** 8. *Still water.* Dax.

5. **crassipes.** L. pinnate; uppermost ternate. Lts. obovate, trifid, and entire; those of the immersed L. divided into capillary segments. Rays 3–5, rigid, thick at the base, somewhat connate! Involucre 0. Partial Stalks 3 or 4 times as long as fruit. **p.** 4. *Marshes.* Corsica. Sard.

6. **inundatum.** L. pinnate, incise. Submersed L. multifid with capillary segments. Umbel of 2 rays, each about 5-flowered. Partial Stalks much shorter than fruit. **p.** 5. *Still water.* Eng. Fr. n. Ger. Tusc. Sic. ✓

282. SIUM.

A. *Vittæ superficial; the lateral ones marginal.*

1. **latifolium.** Root fibrous, stoloniferous. Stem deeply furrowed. L. pinnate. Lts. oblongo- or ovato-lanceolate, equally serrate. Subaqueous L. often bipinnatifid. Involucels of many L. Carpophore attached to seeds. *A tall and slender plant.* **p.** 7, 8. *Ditches and pools.* ✓

2. **longifolium.** "Stem striate. L. pinnate. Lts. lineari-lanceolate, long, unequally dentate, very acute. Involucre usually of one L. Fr. seen on the sides oval, and not round as in *S. latifolium.* **p.** *Ditches and marshes* at Cechia (Bohemia)."—DC. *Not noticed by Koch, nor by Bluff and Fingerhuth.*

B. *Vittæ covered by a thick bark; the lateral ones not forming the margin.*

3. **angustifolium.** Seed quite circular on section. L. pinnate. Lts. unequally lobed and serrate. Involucre of many incise L. *Plant bushy.* **p.** 7, 8. *Still water.* ✓

283. AMMI.

1. **majus.** L. pinnate, with a sharply serrate, cartilaginous margin. Stalks cuneate. Lts. of lower L. obovato-lanceolate; of upper multifid, linear. **a. b.** 5–7. *Fields.* m. and s. Europe. ✓

2. **glaucifolium.** Nearly all the L. bipinnate. Stalks linear. Lts. of lower L. lanceolate; of upper multifid, very narrow. **a. b.** 5–7. *Fields.* It. *Bert. unites this to* majus, *but the more divided L. give it a different habit.*

3. **intermedium.** "All L. decomposito-multipartite. Segments incise or toothed: the lower wedge-shaped; upper lineari-subulate, serrate, very acuminate. Toulouse. Reggio. *Intermediate between* glaucifolium *and* Visnaga."—DC.

4. **Visnaga.** All L. tripinnate. Segments lineari-filiform, cuspidate, divaricate. Primary ✓

Division of upper L. digitate. Rays numerous, equal, *often above* 100; indurated after flowering. **a. b.** 8, 9. *Fields and road-sides.* s. Fr. Italy.

5. **crinitum.** L. supradecompound. Lts. lineari-setaceous, smooth, on a bristly stalk. Sheaths somewhat ventricose, with a scariose margin. Bracts on a sheathing base. Outer Rays longest. Fr. smooth. Upper part of Stem somewhat bristly. **a. b.** 5. *Clayey fields.* Sic. Calab.

284. GASPARRINIA.

1. **virescens.** Root fusiform. Stem branched, furrowed. L. bipinnate; outline oblong. Lts. linear, short, acute. **p.** 6. *Rocky.* Mont Afrique, near Divio in Burgundy. Castel Grande in Lucania. Aspramonte.

285. PETROSELINUM.

✓ 1. **sativum.** L. decompound, shining. Lower Lts. ovato-cuneate, trifid and dentate; upper lanceolate, nearly entire. Partial Bracts filiform. Umbel of many rays. **b.** 6, 7. *Rocks.* Sardinia.

✓ 2. **segetum.** Root-L. pinnate. Lts. ovate, lobed, incise, serrate. Umbel of few unequal rays. **a. b.** 8. *Moist fields.* Eng. s. and w. Fr. *Not in G.*

286. SISON.

✓ 1. **Amomum.** L. pinnate; the upper ones ternate, multifid. Umbels erect. Stem erect. Branches thin, rigid, zigzag. **p.** 8. *Hedges.* Very rare in G. or wanting.

2. **lateriflorum.** "Stem diffuse, dichotomous, divaricate. Divisions of Lts. 2–3-partite, capillary. Umbel of about 3 rays, opposite L.; sessile, or rarely on short stalks. Involucel 0. **a.** 6. Pisa."—Bert.

287. BUNIUM.

A. *Stripe solitary.*

✓ 1. **verticillatum.** Root fascicled. Fibres clavate. L. pinnate, multipartite; outline linear. Segments crowded, whorled! lineari-filiform. **p.** 7, 8. *Moist grassy.* w. Eur.

2. **divaricatum.** Root subglobose. Tuber at base of attenuate stem. L. decompound. Segments linear. Umbel of 6–12 rays, divaricate after flowering. **p.** 5. *Fields.* Istria. *Koch thinks* Carum divaricatum *not the same as* Bunium divaricatum *of Bertoloni; but I see no reason for the suspicion.*

✓ 3. **Bulbocastanum.** Root a subglobose tuber at base of attenuate stem. L. somewhat tripinnate. Segments linear, acute. Umbel of 12–24 rays, erect after flowering. **p.** 6, 7. *Marly fields.* m. and s. Eur.

B. *Stripes two or more.*

✓ 4. **flexuosum.** Root a subglobose tuber at base of attenuate stem. Fr. flask-like. Ridges very small. Kernel curved. Fl. nearly equal. L. 2–3-pinnate. Segments linear, filiform. **p.** 5, 6. *Shade.* w. Europe. Corsica.

5. **capillifolium.** Root a subglobose tuber at base of attenuate stem. Fr. oblong-lanceolate. Ridges very small. Fl. very radiant. Lts. of upper L. elongated, capillary, nearly simple. **p.** 5, 6. *Woods.* Nebrodes. Ætna.

6. **montanum.** Root subglobose. *Stem attenuate*? Fr. not longer than the outer pedicels. Ridges prominent, acute. Lower L. tripinnate. Segments linear, 1-nerved, with a mucro. Bracts lanceolate, with a scariose margin. Rays of umbel 6–10. **p.** 5–7. *Corn.* Monte Maggiore in Ist. Fiume.

7. **alpinum.** Root a somewhat oblong, knobby tuber. Stem flexuose, attenuate. Fr. elliptic-oblong, twice as long as pedicels. Ridges prominent, acute. L. bipinnate, pinnatifid. Segments lineari-lanceolate, short, uniform, nerveless, obtuse. Rays of umbel 6–10. Bracts ovato-lanceolate. **p.** 7, 8. *High.* Monte Magella. Monte Vittore.

8. **aphyllum.** "Root subglobose, fleshy. Stem terete, erect, nearly simple. Stem-L. reduced to a striate sheath. Each involucre of 4–5 acuminate bracts. **p.** Nebrodes."—DC. *Not mentioned by Guss. or Bert.*

288. CRYPTOTÆNIA.

1. **Thomasii.** Umbels disposed in a leafless panicle. Fr. ovoid. Lts. rhombeo-ovate, unequally dentate. **p.** 6. *Shady rivulets.* La Serra in Calabria ulterior. Aspramonte.

289. PIMPINELLA.

A. *Fruit hairless. Root perennial.*

✓ 1. **magna.** L. pinnate. Lts. all ovate, incise or dentate; terminal 3-lobed. Stem scored, somewhat angular. **p.** 7, 8. *Shady hills.*

β. *rubra.* Fl. pink.

γ. *orientalis.* Lts. pinnatifid.

δ. *dissecta.* Lts. of upper L. bipinnatifid.

2. **Saxifraga.** L. pinnate. Lts. of root-L. roundish, incise or dentate; of upper in various linear segments. Stem finely striate, terete; upper part nearly naked. Fl.-stalks hairless. **p.** 7, 8. *Dry.*

β. *hircina.* Somewhat downy. Lts. nearly all pinnatifid or laciniate.

γ. *alpina.* Lts. of lower L. deeply palmato-dentate.

3. **nigra.** L. pinnate. Lts. of lower L. ovate, obtuse, lobed, and dentate. Stem finely striate; upper part nearly naked. Fl.-stalks densely downy. *Root becomes blue when cut.* **p.** 7, 8. *Dry hills.* n. G.

4. **lutea.** L. pinnate, downy. Lts. of lower L. rounded, obliquely cordate, dentate; the terminal somewhat 3-lobed. *Fl. yellow.* Stem dichotomously panicled. Upper L. at branchings linear. **p.** 6, 7. *Open volcanic hills.* Isl. of Pantellaria and Cosyra.

5. **anisoides.** Root-L. bipinnate. Lts. subrotundo-ovate, serrate (cuneato-ovate, pinnatifido-dentate, Bert.). Sheaths of upper L. leafless. Umbels numerous. Rays 5–7. Fr. ovoid. Styles of Fr. long, divaricate. **p.** 7. *Hills.* Calabria. w. Lucania. Pesto?

6. **Gussonii.** "Stem paniculato-dichotomous. Sheaths on the stem nearly leafless. Root-L. bipinnate. Lts. cuneato-ovate, pinnatifido-dentate, obtuse. Fr. roundish, hairy. Styles of Fr. recurved. **p.** 7, 8. *Grassy hills.* Coast of Sic."—Bert.

B. *Fruit hairy. Root perennial or biennial.*

7. **Tragium.** Root-L. pinnate. Lts. obovate, inciso-serrate. Stem-L. very few. Pet. hairy. Fr. tomentose. **p.** 6, 7. *Dry rocky.* s. Eur.

8. **peregrina.** Root-L. pinnate. Lts. cordate, serrate; terminal generally 3-lobed. Stem-L. narrower. Fr. hispid. **b.** 6, 7. *Dry rocky.* s. Eur.

C. *Fruit downy. Root annual.*

9. **Anisum.** Root-L. cordato-subrotund, lobed, inciso-serrate; middle pinnatifid; uppermost trifid. Segments linear. Margin entire. Fr. with scattered hairs. **p.** 7, 8. *Cultivated on a large scale in* Thuringia and Alsace.

290. APIUM.

1. **graveolens.** Acumen of Pet. closely involute. L. pinnate: uppermost ternate, with cuneiform leaflets. Lts. incise and dentate at top. **b.** 8, 9. *Salt marshes.*

291. CARUM.

1. **Carui.** L. bipinnate. Lowermost Lts. decussate, all multifid. Uppermost L. opposite: one sessile, the other on a dilated stalk. Involucels 0. **p.** 5, 6. *Grassy.*

292. ÆGOPODIUM.

1. **Podagraria.** Root-L. twice ternate. **p.** 5, 6. *Rich.*

293. TRINIA.

1. **Kitaibelii.** Partial bracts 4–5. Ribs of Fr. obtuse. **b.** 6. s. Moravia. *I have a specimen which I believe is from Uphill, Somersetshire. Probably a var. of* T. vulgaris.

2. **vulgaris.** Partial bracts 1 or 0. Ribs of Fr. obtuse. **b.** 5, 6. *Open downs.*

β. *Dalechampii.* Dwarf. Lobes of the L. linear. Umbels crowded, many-flowered. K. Naples.

Tribe V. *SESELINEÆ.*

294. ŒNANTHE.

A. *Root fascicled, more or less tuberous. Kernel of fruit imbedded in a corky mass.*

1. **fistulosa.** Stem-L. pinnate. Stalk fistulose, longer than L. **p.** 7, 8. *Water.*

α. Root-L. bipinnate. Lts. lobed, cuneate.

β. *Tabernæmontani.* Root-L. bipinnate. Lts. multifid. Divisions linear. **p.** *Wet.* Alsace. Palat.

2. **globulosa.** Roots club-shaped. Lower L. bipinnate, segments lanceolate; upper pinnate, segments linear. Umbel of fruit rarely of more than 2 rays. Fr. 6–12, sessile, globoso-turbinate, contracted at top, very large. **p.** 5. Ostia. Civ. Vecch. Cors. Sard. Sicily.

3. **densa,** J. W. Roots club-shaped. Lower

L. bipinnate, inciso-pinnatifid, segments lanceolate; upper pinnate, segments linear, very long. Umbel of 5–12 rays. Fr. 50–60, elliptic; outer stalked. **p.** 5, 6. *Ditches.* Cannes. Ostia.

B. *Root fasciculate. Corky mass forming a ring at base of fruit.*

4. **pimpinelloides.** Tubers roundish or ovoid, on filiform fibres. Root-L. bipinnate. Segments cuneiform, incise. Segments of stem-L. linear, very long, entire. Fr. cylindrical. **p.** 6, 7. *Moist pastures.*

5. **Lisæ.** Tubers small, ovoid or cylindrical, terminating in a long fibre. L. bipinnate. Lts. small: those of lower L. subrotund, obtusely lobed; of upper oblong or linear. Umbel of few rays. Fl. few. Fr. small, somewhat cylindrical; outer on stalks shorter and narrower than fruit. **p.** 4, 5. *Moist.* Sard.—Bert.

6. **Jordani.** Fibres cylindrical, somewhat fleshy, not swelling or forming any distinct tubers. All L. bipinnate. Lts. of lower subrotund, obtusely 3-lobed or entire; of upper lineari-lanceolate. Involucel exceeding the nearly globose umbellule. **p.** 6. *Marshes.* Between River Sele and Pæstum.—Bert. *Bert. says, "Fruit exactly like that of* O. silaifolia," *on which account I put the species here, though with some doubt, as Bert. describes the fruit of* O. silaifolia *as more contracted at the base than at the top.*

7. **silaifolia.** Fibres oblong or somewhat club-shaped. L. 2–3-pinnate. Lts. of lower L. lanceolate; of upper linear; but all nearly alike. Fr. cylindrical. **p.** 6, 7. Eng.? Fr. Laybach. Istria. Savoy. Naples.

C. *Root fasciculate. Corky mass confined to the gussets of the seeds and to the ribs.*

8. **peucedanifolia.** Tubers ovoid or oblong, sessile. Lower L. bipinnate; upper pinnate: divisions of all linear. *Outer petals twice as large as in* O. Lachenalii, *with a longer claw, and cloven only to a third of their length.* **p.** 6, 7. *Rich meadows.* Fr. G. Lombardy. *Roots are eaten in* w. of Fr.

9. **Lachenalii.** Tubers cylindrical or somewhat club-shaped, long. Lower L. bipinnate. Lts. ovate or cuneate, obtusely incise; upper pinnate. Leaflets linear, acute. Fr. oblong, but attenuate at each end. Pet. of rays subrotund, divided to middle. *The divisions of the upper L. are twice as long as in* O. silaifolia. **p.** 6, 7. *Marshy meadows, ditches.*

10. **crocata.** Tubers cylindrical or somewhat fusiform, thick and long. L. 2–3-pinnate. Lts. cuneato-ovate, inciso-dentate: all nearly alike. Fr. nearly cylindrical. **p.** 7. *Ditches. Very poisonous.* Eng. Fr. Cors. Sardinia.

D. *Root simple, fusiform, fibrous.*

11. **Phellandrium.** Stem greatly enlarging towards the base. Divisions of submersed L. capillary. Upper L. tripinnate. Lts. ovate, pinnatifid. Umbels opposite the L. Fr. elliptico-oblong. **p.**? 7, 8. *Still water.*

12. **fluviatile.** Stem rather diminishing towards the base. Divisions of submersed L. cuneate. Upper L. tripinnate. Lts. ovate, pinnatifid. Umbels opposite L. Fr. elliptico-oblong. **p.**? 7, 8. *Running water.* Discovered by Mr. Coleman at Hertford; frequent in Hampshire and Dorsetshire. *The Fruit when dried exhibits but little of the corky substance.*

295. CRITHMUM.

1. **maritimum.** L. tripinnate. Lts. lanceolate, fleshy. Bracts ovato-lanceolate, acute. **p.** 8. *Rocky calc. shores. Not in G.*

296. ÆTHUSA.

1. **Cynapium.** L. all bipinnate. Lts. lanceolate, pinnatifid. Outer rays twice as long as fruit. Involucel of 3 pendulous L., much longer than umbel. **a.** 6–8. *Rich.*

2. **cynapioides.** Divisions of L. oblong, acute. Outer rays of umbel about as long as fruit. Involucel of 3 L., not longer than umbel. **a.** 6, 8. *Woods and waysides.* lower Aus. Boh.

297. FŒNICULUM.

1. **officinale.** L. decompound. Segments capillary. Rays 13–20. Stem round at the base. **b.** 7, 8. *Sandy and rocky uncult. Rare in G.*

Two allied species are said by Bertoloni to be cultivated in Italy: F. sativum, *an annual plant with a hollow stem, and a fastigiate (not concave) umbel; and* F. dulce, *also an annual, with a swelling and somewhat compressed base to the stem, which is eaten; and L. in two opposite rows.*

2. **piperitum.** Laciniæ of upper L. subu-

late, mucronulate, rigid. Rays 8–10. **p.** 6–9. Sic. Sard. Rome. Terrac.

298. BRIGNOLIA.

1. **sicula.** First L. simple; later pinnate or bipinnate. Lts. ovato-lanceolate. **p.** 6. *Dry, open.* Gen. Cors. Sic. Rome.

299. SESELI.

A. *General bracts* 0; *partial united almost to the summit.*

1. **Hippomarathrum.** L. tripinnate; outline oblongo-ovate. **p.** 7, 8. *Calc. rocks.* Als. Pdm. Ger.

B. *General bracts few or* 0; *partial separate, or only just adhering at the base.*

2. **coloratum.** Branches simple. Lower L. tripinnate; outline oblongo-ovate. Divisions linear. Rays 15–20, angular, downy. Partial bracts lanceolate, with broad membranous margin, exceeding partial rays. Germen downy. **b. p.** 8. *Hills.* Fr. G. It.

Carvifolia

3. **polyphyllum.** Branches short and few. Lower L. bipinnate; upper pinnate: Lts. of all linear; upper reduced to a sheath. Rays 15–20, furrowed, hairy. Partial bracts setaceous, about half as long as umbel. **p.** 8–10. *Rocks.* Capri.

4. **montanum.** Stem branched. L. bi-tripinnate; outline oblongo-ovate. Stalk channeled. Divisions linear. Rays 6–12. Bracts lineari-subulate, with a narrow membranous margin. Germen hairy. **p.** 7, 8. *Open hills.* s. and m. Eur.

5. **tortuosum.** Stem rigid, with numerous divaricate, flexuose branches. L. rigid, decompound; outline triangular. Segments trifid. Laciniæ linear, short, somewhat acute. Rays 5–10, hairy and angular. Partial bracts nearly equal to partial umbel, lanceolate, with broad membranous margin. Fr. hairy. **p.** 9, 10. *Open.* s. Fr. Sic.

6. **Bocconi.** "Stem terete, woody at the base. L. ternato-supradecompound. Lts. thick, lanceolate, entire or trifid. Upper sheaths lax, nearly leafless. Rays 8–15. Partial bracts lanceolate, acuminate, about as long as downy partial rays. Fr. oblong, smooth when old. **p.** 10, 11. *Calc. rocks.* Sic. Corsica. Sard."—Bert.

7. **varium.** Branches erect. Lower L. ternato-tripinnate; outline triangular. Stalks sulcate. Laciniæ linear. Rays 15–25, nearly terete, hairless. Partial bracts lanceolate, acuminate, half as long as rays. Fr. oblong. Furrows with a single stripe. **p.** 7, 8. *Dry stony.* lower Austria.

8. **glaucum.** Branched. Lower L. ternato-tripinnate; outline triangular. Stalk terete or somewhat compressed. Lts. lineari-lanceolate. Rays 10–15, nearly terete, hairless. Partial bracts subulate, with a narrow membranous margin. Germen wrinkled. Fr. sometimes downy. Furrows with 1 stripe. **b.** 7, 8. *Woody hills.* s. e. G. Mantua. Friuli. ✓

9. **Gouani.** Stem divaricately branched from base. Lower L. triternato-decompound; outline triangular. Lts. lineari-filiform. Rays 3–6, terete, hairless. Partial bracts subulate, with narrow membranous margin, equalling partial rays. Germen wrinkled and somewhat downy. Fr. hairless. (Furrows with 3 stripes, Koch.) **p.** 8, 9. *Calc. rocky.* s. Fr. Trieste. n. e. It. *According to Bert. this is the* S. elatum *of Linn., but Koch justly observes that the description does not agree.*

Lucanum

300. LIBANOTIS.

1. **montana.** Stem furrowed. L. bipinnate. Divisions sessile. Lts. inciso-pinnatifid; the lowermost decussate. General bracts numerous. Umbels hemispherical. *Fr. pubescent.* **p.** 8, 9. *Hills.* m. Eur. ✓

β. athamantoides. Fr. hairless. Carniola.

γ. pubescens. Stem angular. Stem and L. pubescent. Fr. villous. Pyr. w. Fr.

δ. daucifolia. Stem angular. Lts. finely divided into lineari-lanceolate, acute lobes. Pyr. Auv. Austr.

2. **verticillata.** Stem terete, furrowed; upper part leafless. L. bipinnate: divisions sessile. Lts. pinnatipartite, incise: lowermost lobes decussate. General bracts few. Ripe Fr. without hairs. Chambre d'Amour in Pyr. near Bayonne. ✓

301. ATHAMANTA.

1. **sicula.** L. tripinnate. Divisions of Lts. ovate or lanceolate, very short, bluntish. Umbel of 10–12 rays. Pet. externally villous. Fr. oblong, velvety. **p.** 6. *Calc. hills.* Alps. of Pdm. w. Liguria. Monte Gargano. Apulia. Sicily.

2. **cretensis.** L. tripinnate. Lts. divided into linear, trifid, acuminate lobes: the lowest hardly exceeding the others. Umbel 6–9- ✓

rayed. Pet. hirsute on the back. Fr. oblongo-lanceolate, attenuate, covered with spreading hairs. **p.** 6–8. *Rocky, open hills.* m. and s. Eur.

3. **Matthioli.** L. tripinnate. Lts. trifid. Divisions long, lineari-filiform, divaricate. Umbel 15–25 rayed. Fr. oblongo-lanceolate, attenuate, covered with erect, velvety hairs. **p.** 6, 7. *Mountains.* Nice. Italian Tyrol. Ven. Alps. Sty. Carniola.

302. TROCHISCANTHES.

1. **nodiflorus.** Stem much branched; upper part naked. Lower L. broad, triternate. Lts. ovato-oblong, acute, coarsely serrate. **p.** 6, 8. *Mountain woods.* Dau. Prov. Vall. Pdm. Gen. Bol.

303. LIGUSTICUM.

A. *Calyx of 5 distinct Teeth. General bracts many.*

1. **scoticum.** L. twice ternate. Lts. rhomboo-ovate, dentato-serrate. Bracts entire, membranous on margin. **p.** 7. *Sea-coast.* Sc.

2. **ferulaceum.** L. supradecompound. Lts. somewhat remote, linear, cuspidate. Bracts pinnatifid at the summit. **p.** 6, 7. *Open valleys.* Alps of Dau. Pdm. Jura. Saleve.

B. *No Calyx.*

3. **resinosum.** Stem nearly naked, branched at top. Lower L. pinnate, decussate. Lts. pinnatifid. Segments lanceolate, serrate, cuneato-decurrent; uppermost sheaths leafless. Bracts uncertain. **p.** 5, 6. Cal. Sic.

4. **pyrenæum.** Stem branched, striate. L. shining, supradecompound. Lts. pinnatifid. Segments remote, linear, short, rough on margin, mucronate. Involucre of a few deciduous L. **p.** 6, 7. *Open.* Pyr. Dau.

corsicum.

5. **Seguieri.** Stem branched, striate. L. decompound. Lts. pinnatifid. Divisions remote, linear, somewhat falcate, acuminate. Margin smooth. Involucre 0, or of 1–3 simple L. **p.** 7, 8. *Calc. mountains.* Carrara. Monte Generoso. Monte Baldo. Cors. Carn. Istria. Friuli.

304. WALLROTHIA.

1. **tenuifolia.** Stem simple, smooth, nearly naked. Lower L. decompound; upper trifid. Involucre of 1–2, Involucels of 5–8 lineari-lanceolate L. **p.** *High rocks.* Central Pyr. *rare.*

305. MEUM.

1. **athamanticum.** L. supradecompound. Divisions somewhat verticillate, capillaceo-setaceous. General bracts few or one. Involucel of few L., about half surrounding partial umbel. **p.** 5, 6. *Mountain meadows.*

2. **Mutellina.** L. 2–3-pinnate. Segments lineari-lanceolate, acute. Stem simple, nearly naked. General bracts 0; partial of many lineari-lanceolate L., half surrounding the umbel. **p.** 7, 8. *High meadows.* m. Eur.

3. **corsicum.** "Stem sparingly branched. L. bipinnate; outline triangular. Lts. pinnatifid. Segments uniform, narrow, lanceolato-linear, mucronate. *Rays of umbel* 6–12, *rough internally, contracted in fruit. Ribs of fruit acute, rough on edges. Stripes* 3 *or* 4. *Styles of fruit long, recurved.* **p.** 7, 8. Corsica."—Bert.

4. **pyrenaicum.** "L. pinnate. Lts. inciso-pinnatifid. Segments lanceolato-linear, decussate. Stem simple, nearly naked. General bracts 0; partial lanceolate. **p.** *Very high.* e. Pyr." *rare.*—DC.

5. **caruifolium.** L. bipinnate. Lts. multifid; lower remote. Segments linear, very narrow, short. Involucre and involucels each of about 5 L.; *one or two of the first trifid.* Involucel sometimes of 3 L., and then going only half round. Fr. oblong. **p.** 6–8. Abr.

6. **rigidulum.** Lower L. pinnate, decussate. Lts. multipartite. Segments linear. Upper L. pinnate and simple, long. Involucre 0 or of 1 L. Involucel of many L., somewhat shorter than umbellule. Fr. ovoideo-oblong. **p.** 6, 7. *Calc. mountains.* Mountains of Carrara.

306. SILAUS.

1. **pratensis.** L. tripinnate. Lts. deeply pinnatifid; their segments opposite, linear, mucronate. **p.** 8, 9. *Meadows.*

307. CNIDIUM.

1. **Monnieri.** Stem branched, angular. L. bipinnate. Lts. pinnatifid. Divisions lineari-lanceolate, apiculate. Partial bracts setaceous, rough with little bristles, equalling umbel. **a.** 7, 8. *Thickets.* s. Fr. Goritz. Carniola.

2. **apioides.** Stem branched, striate. L. 2–3-pinnate. Lts. pinnatifid. Divisions lineari-lanceolate, mucronate. Partial bracts setaceous, smooth, equalling rays. **p.** 7, 8. *Mountain*

rocks. e. Fr. Carniola. Fiume. It. Canton of Tessin.

3. **venosum.** Stem nearly simple, striate. L. pinnate. Lts. pinnatifid. Divisions linear, rather acute, sometimes trifid. Sheaths long; the upper narrow. Partial bracts subulate, smooth, equalling umbel. **p.** 7, 8. *Moist meadows.* Saxony.

308. CORISTOSPERMUM.

1. **cuneifolium.** Crown of root covered with the dead sheaths. Branches short; uppermost sometimes verticillate. L. supradecompound; outline of lower triangular. Partial bracts membranous on margin. Fr. ovato-oblong. Ribs somewhat winged. **p.** 8, 9.

309. GAYA.

1. **simplex.** General bracts 7–10, generally trifid. **p.** 7, 8. *Very high.* Alps.

2. **pyrenaica.** General bracts 1–5, undivided. **p.** *Very high.* Pyr. *rare.*

310. CONIOSELINUM.

1. **Fischeri.** L. bipinnate, pinnatifid. Segments oblongo-linear. Involucel of 5–7 lineari-subulate bracts, as long as umbellule. **b.** *Grassy hills.* Riesengeb. in Silesia.

Tribe VI. *ANGELICEÆ.*

311. SELINUM.

1. **caruifolium.** Stem furrowed. Rays smooth. **p.** 7–9. *Moist woods and meadows.*

312. LEVISTICUM.

1. **officinale.** L. bipinnate. Lts. cuneate, undivided or 3-lobed. **p.** 6–8. *Mountains.* Pyr. Cev. Limburg. Verviers.

313. ANGELICA.

1. **Razoulsii.** L. 2–3-pinnate. Lts. lanceolate, serrate, acute, rough underneath, decurrent at the base, sometimes bipartite. Acumen of petals incurved. **p.** Pyr.

2. **montana.** L. tripinnate. Lts. lanceolate or ovate, acuminate, quite smooth, mucronato-serrate; the uppermost decurrent. Acumen of Pet. nearly straight. **b.** 7, 8. Jura. Alps. Cevennes. *This and the preceding seem to be var. of* A. sylvestris.

3. **sylvestris.** L. 2–3-pinnate. Lts. ellipticо-ovate, oblique, acute, serrate, not decurrent. Rays 20–40, nearly equal. **p. b.** 7, 8. *Moist woods, and by streams.* ✓

4. **pyrenæa.** Root-L. subbipinnate, smooth. Lts. pinnatipartite. Divisions lineari-lanceolate, acute, entire or 3-cleft. Rays 4–7, very unequal. Stems simple, nearly naked. **p.** 7, 8. *High pastures.* Pyr. Cev. Vosges. ✓

5. **scabra.** L. tripinnate. Stalks and nerves rough with glands. Rays 10–34: the middle ones very short. Stem short, leafy at the base. **p.** *Snowy.* Cueillade de Nourri in c. Pyr.

314. ARCHANGELICA.

1. **officinalis.** L. bipinnate. Lts. somewhat cordate, acutely serrate; the ultimate 3-lobed. Sheaths lax, sack-like. Partial bracts equalling partial umbel. **p.** 8, 9. *Banks of streams. occ.*

315. OSTERICUM.

1. **palustre.** L. ternato-decompound. Segments cordate, unequally dentate. General bracts few; partial numerous. **p.** 7, 8. *Marshy meadows.* Erfurt, Thuringia. ✓

Tribe VII. *PEUCEDANEÆ.*

316. TOMMASINIA.

1. **verticillaris.** L. tripinnate. Lts. ovate, acutely serrate. Sheaths capacious. **p.** 7, 8. *Hills.* Pdm. Vall. Gri. Tess. Sty. Goritz. Boh. Tuscany. ✓

317. FERULA.

1. **communis.** L. supradecompound, *green.* Segments lineari-setaceous, flaccid. Central umbel nearly sessile; lateral stalked, barren. Sheaths of the upper L. very large. **p.** 4, 5. *Open hills.* Coasts of Mdt. ✓

2. **neapolitana.** L. supradecompound, *glaucous beneath.* Lts. 3–5-partite. Segments lineari-lanceolate. Central umbel nearly sessile; lateral stalked, barren. Fr. oblong, narrow. **p.** *Hills.* Rome. Naples.

3. **glauca.** L. supradecompound, *shining above, glaucous beneath.* Segments broadly linear, somewhat trifid. Central umbel stalked; lateral barren, on longer stalks. Stalks

of the uppermost L. dilated. (Inner face of seed downy, BERT.) **p.** *Open.* Mireval near Montp. Prov. Capri.

318. FERULAGO.

1. **galbanifera.** Stem furrowed. L. supradecompound, decussate; outline ovate. Lts. pinnatifid, divaricate. Segments linear, cuspidate. General bracts many, oblongo-lanceolate, reflexed. **p.** 7, 8. *Open hills.* Coasts of Mdt.

2. **geniculata.** Stem finely striate, swelling at joinings, branched, nearly naked at top. L. supradecompound. Lts. decussate. Segments linear, flat, acute, rigid. Bracts many, ovato-lanceolate, short. Fr. elliptico-oblong. **p.** 6. *Dry calc. hills.* Sic. K. Nap.

3. **Barrelieri.** "L. tripinnate; outline oblong. Lts. rigid, trifid. Segments lineari-setaceous, very short, mucronulate, rough on margin. Upper branches whorled. Bracts coriaceous. Fr. oblong. Ridges obtuse. **p.** 7. Vultur. Apulia."—BERT.

319. PEUCEDANUM.

A. *Involucre* 0 *or of* 1–3 *deciduous L. Margin of Fruit narrow.*

i. *L. ternate.*

1. **paniculatum.** "Stem forming at top a much branched panicle. L. ternato-supradecompound. Lts. canaliculato-filiform, with a very narrow cartilaginous margin. Umbel divaricate. Fr. oblong, exquisitely striped. **p.** 7. Nouza in Cors."—BERT. "Certainly different from *P. officinale,*" BERT.; *but no distinction is given, except that the fruit is larger.*

2. **officinale.** Stem branched, striate. L. five times ternate. Lts. narrow, linear attenuate at each end. General bracts 3. *Flowers yellow.* Stalks 2–3 times as long as fruit. **p.** 7, 8. *Meadows. occ.*

2. **parisiense.** L. 3–4 times ternate. Lts. 27–46, lineari-lanceolate; the terminal ternate, the others undivided. *Fl. white.* Fr. about as long as stalk. **p.** 7, 8. Fr. Trieste?

4. **Petteri.** L. twice ternate. Pinnæ of lower L. sometimes of 5 Lts. Lts. 9–13, coriaceous, lanceolato-linear, acuminate, quite entire. *Fl. white. Stem erect. Umbel short.* **p.** 8, 9. *Boggy meadows.* Trieste.—BERT.

ii. *L. pinnate.*

5. **Schottii.** Stem striate. *L. dull.* Lts. sessile, many-cleft. Segments linear, acuminate; the lower decussate. Rays of umbel smooth. Furrows of fruit with one stripe. **p.** 7, 8. *Warm rocks.* Isonzothal, Carniola.

B. *Involucre of many permanent L.*

i. *Margin of Fruit narrow. L. tripinnate.*

6. **Cervaria.** Lts. ovate, somewhat spinuloso-serrate; lower with an external lobe at the base. Branches of L.-stalk spreading. Stripes of interior face of fruit parallel. **p.** 7, 8. m. and s. Eur.

7. **Oreoselinum.** L. shining. Stalks of divisions refract. Lts. remote, ovate, inciso-pinnatifid. Teeth mucronate. General bracts reflexed. Stripes of interior face of fruit bowed. **p.** 8, 9. *Open hills.* m. Eur.

8. **alsaticum.** Stem furrowed, somewhat panicled. Lts. ovate, pinnatifid. Segments lineari-lanceolate, rough on margin. General bracts spreading. Rays of umbel smooth. Styles of fruit reflexed, hardly exceeding stylopode. **p.** 7, 8. *Dry stony hills.* Als. Prov. Ger.

9. **venetum.** Stems furrowed, somewhat panicled. Lts. ovate, pinnatifid. Segments lineari-lanceolate, rough on margin. General bracts spreading. Rays of umbel rough on inner side. Styles reflexed, about half as long as fruit. **p.** 7, 8. *Dry rocky hills.* s. side of Alps from Sw. to Fiume. Genoa. Bologna.

10. **palustre.** Stem furrowed. Pinnæ pinnatifid, incise. Segments linear, acuminate. Bracts linear, sometimes divided. Bracteoles free. Stripes of internal face of the fruit covered! *Ditches and marshy meadows.* Fr. Sw. G. Lomb.

ii. *Margin of Fruit broad, somewhat transparent. L. ternato-tripinnate, many-cleft.*

11. **austriacum.** Stem furrowed, somewhat branched. Lts. ovate, cuneate at base. Segments lineari-lanceolate, acuminate. Margin smooth. Teeth coarse, blunt, mucronate. **p.** 7, 8. *Stony thickets.* Vosges. Sw. Carniola. Carinthia. Boh. *Fr., according to Bert., exactly elliptic. Koch says it varies from subrotund to oblong-oval.*

12. **sulcatum.** "Stem furrowed, angular, full, with a few alternate branches. L. tripinnate. Lts. cuneate, pinnatifido-incise. Segments narrow, acute, mucronulate. Umbels large. Fruit elliptico-oblong. **p.** 6–8. Abr. Vallombrosa. *Differs from* austriacum *by the much larger umbel, and by the lengthened shape of the Fruit.*"—BERT.

13. **involucratum.** "Stem furrowed, branched. Segments of L. linear, cuspidate, rough on the margin. General bracts incise; partial lanceolate, with a white membranous margin. Umbels somewhat proliferous. Rays rough on inner side. **p.** *Mountains.* Fenestrelle in Pdm."—DC.

14. **rablense.** Stem furrowed, somewhat branched. Segments of L. narrow linear, acuminate. Margin smooth. Bracts lineari-subulate, quite entire. Rays of umbel rough on inner side. **p.** 7, 8. *Rocky.* Valley of Raibel in Carinthia. On the Wochein in Carniola. Monte Bornio and Monte Generoso in the Alps.

320. HERACLEUM.

A. *Internal face of Seed with two distinct stripes.*

1. **longifolium.** "L. rough, pinnate or pinnatifid. Divisions lobed or palmato-partite. Lobes long, inciso-crenate. Bracts lineari-setaceous. Fr. cuneiform, hairless even when young. Fl. slightly radiant, white. **p.** *Mountain meadows.* Austria."—DC. *Not admitted by Koch.*

2. **sibiricum.** "L. scabro-hirsute, pinnate or pinnatipartite. Divisions lobed or palmato-partite, serrate. Germen nearly smooth. Fr. broadly oval, emarginate. Fl. nearly all similar, yellowish. **b.** 6–9. Alps and Sudetes."—Koch.

3. **cordatum.** "L. quinato-pinnate and ternate, hairy. Lts. broad ovate, palmate, acuminate, dentate. Germen villous. Ripe Fr. hairless. Fl. slightly radiant, greenish white. Pet. externally villous at base. **p.** 6, 7. Nebrodes and Busambra in Sic."—Bert.

4. **Sphondylium.** "L. scabro-hirsute, pinnate or pinnatipartite. Divisions lobed or palmato-partite. Germen downy. Ripe Fr. hairless, oval, emarginate. Fl. radiant, *white or pinkish, sometimes greenish.* **b.** 6–9. *Meadows and moist woods.*"—Koch.

5. **elegans.** "L. quinato-pinnate and ternate, rough. Lts. pinnatifid. Segments lanceolate, acuminate, remotely serrate and incise. Germen villous. Fl. very radiant, *white.* **p.** 7, 8. Mont Cenis."—Bert. *Var. of* Sphondylium, *according to Koch.*

6. **Panacis.** "L. ternate, downy and white beneath. Lts. subrotundo-ovate, palmate, closely serrate and incise. Fr. always smooth. Vittæ descending below middle of furrows. Fl. very radiant, *white.* **p.** 6–8. *Mountains.* It."—Bert. *Koch says the Italian plant is his* H. asperum, *but the descriptions do not agree.*

7. **asperum.** "L. simple, somewhat palmate. Segments acuminate or cuspidate, unequally dentato-serrate. Stem-L. sometimes ternate. Germen rough. Ripe Fr. oval, emarginate, hairless. Fl. radiant, *white.* **b.** 7, 8. *Subalpine woods by the side of torrents.* Jura. e. Alps."—Koch.

8. **pyrenaicum.** "L. very broad, hoary beneath, palmate. L. lanceolate, dentate or ternate. Bracts few. Germen covered with long hairs. Ripe Fr. nearly round, hairless. **p.** 6, 7. *Rocky meadows.* Pyr. Tyrol. It. Alps."—DC. (Fl. very radiant, Bert.) *Not in G.,* Koch. *Not in Italy,* Bert.

9. **pollinianum.** "Stem hairy. L. simple, cordato-subrotund, palmate, hairless above, pubescent beneath. Lobes broad ovate, sharply dentate. Germen covered with short hairs. Fr. hairless. Stripes of the external furrows reaching about two-thirds, of the internal face half down the fruit. Fl. slightly radiant, *white.* **p.** 7, 8. Tamburra. Monte Baldo."—Bert.

10. **Orsini.** "Stem muricate. L. simple, acutely palmate, crenate or slightly dentate, hairy on veins beneath. All the stripes of the Fr. about half its length. Fl. slightly radiant, *yellowish.* **p.** 7, 8. Abruzzi."—Bert.

B. *Inner face of Seed without distinct stripes, or only very short ones.*

11. **alpinum.** L. simple, cordato-subrotund, palmate. Lobes blunt or with acumen, crenate or somewhat incise. Partial bracts setaceous. Fr. roundish obovate. **p.** 7, 8. Pyr. w. Alps. Jura.

12. **austriacum.** L. pinnate. Lts. sessile: those of root-L. ovate, obtuse; of stem-L. lanceolate, acuminate, somewhat lobed at the base; terminal trifid. Fr. oval, smooth. Germen downy. **p.** 7, 8. e. Alps.

13. **minimum.** L. bipinnate, nearly all from root. Lts. lineari-lanceolate, somewhat incise. Partial bracts 0. **p.** Alps of Dau. Mont Ventous. *very rare.*

321. PASTINACA.

1. **Opoponax.** Lower L. bipinnate. Lts. ovate or oblong, serrulate or crenate. Stalks strigose. About 6 stripes on inner face of seed. **p.** 6. *Open.* s. Fr. It. Sic. *occ.*

Fleischmanni

✓ 2. **sativa.** Stem furrowed. L. pinnate. Lts. ovato-oblong, obtuse, crenato-dentate, incise at base; the ultimate 3-lobed. Inner face of seed with 2 stripes. **b.** 7. *Meadows.*

β. *opaca.* Lts. much larger; these and the stalks velvety. *This is also the* P. latifolia *of DC., and the* P. Kochii β *of Duby.*

3. **divaricata.** Downy. Stem terete. L. pinnate. Lts. of the root-L. 9–11; of the stem-L. 3–5, ovate; undivided, except the terminal, which is somewhat 3-lobed. Teeth mucronulate. Fr. circular. Stripes on inner face usually 4. **p.** 7. Bastia, Calvi and Cape Corso in Corsica.

lucida

322. ANETHUM.

✓ 1. **segetum.** Fr. ellipsoid, almost destitute of the membranous margin (no margin, Guss.). **a.** 5, 6. *Clayey cult.* Toulon. Sard. Sic. Cal.

2. **graveolens.** Fr. elliptic, with a broad flat margin. **a.** 7, 8. *Escapes.* s. Fr. Oneglia. Istria.

323. IMPERATORIA.

✓ 1. **Ostruthium.** L. biternate. Lts. ovate, entire or 3-lobed, doubly serrate; side ones unequal at base. Edge rough. Sheaths large. **p.** 7, 8. *Moist, shady, mountain meadows.*

2. **angustifolia.** L. biternate. Lts. oblong, attenuate. Divisions inciso-serrate. **p.** 7. Mountains of Tende in Pdm.

324. PALIMBIA.

✓ 1. **Chabræi.** Stem branched, leafy. L. pinnate. Lts. decussate, 3–5-partite. Segments linear, acute. Rays unequal. General bracts 0; partial 3–4, lineari-subulate. **p.** 8. *Woods and thickets.* e. Fr. Jura. G. n. It. Sic.

325. TORDYLIUM.

A. *Vittæ solitary.*

✓ 1. **maximum.** Stem retrorsely hispid. L. pinnate. Lts. lanceolate, crenate. Upper divisions of the upper L. elongated. Bracts linear, shorter than umbel. Fr. setoso-hispid. **a.** 6, 7. *Fields.* m. and s. Eur.

B. *Vittæ* 4–10.

✓ 2. **officinale.** Hirsute. L. pinnate. Lts. cordato-ovate, lobato-crenate; uppermost variously divided into almost linear lobes. Bracts lineari-setaceous: partial equalling umbel. **a. b.** 6, 7. *Fields.* Fr. Italy.

"Terminal Lt. of lower L. cordate, of upper lanceolate. Furrows with a single stripe."—Bert.

3. **apulum.** Stem branched, leafy, villous at the base. L. pinnate. Lts. sessile, inciso-crenate: those of the upper L. pinnatifid, ✓ linear, acute. Bracts setaceous, short. Fr. tubercled and finely striate. **a.** 4–6. *Fields.* Istr. s. Italy.

Tribe VIII. *SILERINEÆ.*

326. SILER.

1. **trilobum.** L. bi-tri-ternate. Lts. roundish, 3-lobed. **p.** 7, 8. *Mountains.* Pyr. ✓ Prov. Hanover. Aus.

327. KRUBERA.

1. **dichotoma.** L. tripinnate, pinnatifid. Segments linear, somewhat incise. **a.** 5. *Fields.* Sic. Sard.

Tribe IX. *THAPSIEÆ.*

328. THAPSIA.

1. **garganica.** L. 2–3-pinnate, shining. Segments linear, acute, quite entire, decurrent or confluent. Bracts few. Fr. cordate at base. **p.** 6. *Open hills.* Calab. Sic.

2. **villosa.** L. bipinnate, villous. Lts. oblong, sinuato-pinnatifid; the lowermost de- ✓ flexed. **p.** 6. *Hills and thickets.* s. Fr.

3. **fœtida.** L. tripinnate. Lts. spreading, attenuate at base, pinnatifid. Segments short, lanceolate, dentate. Bracts 0. **p.** *Mountain thickets.* Val Vaccaria and Val Novesa in Monte Baldo. *Not noticed by Bert.*

329. LASERPITIUM.

A. *Lts. ovate, cordate, or subrotund.*

1. **Archangelica.** Stem striped, strigose. L. ternato-tripinnate. Lts. ovate, unequally serrate; terminal trifid, on a conical base. Upper sheaths inflated. Involucre reflexed, of many L., 1 or 2 of which are usually trifid. **p.** 8, 9. Hallstadt. Carniola. Sudetes.

2. **latifolium.** Stem slightly striped, hairless. L. ternato-bipinnate. Lts. cordate, serrate, undivided, or the terminal 3-lobed. Involucre reflexed, of many entire L. Rays somewhat rough. **p.** 7, 8. *Hill thickets.* s. and m. Eur.

β. asperum. L.-stalk and under side of L. hirsute.

3. **marginatum.** Stem striate, smooth. L. ternato-bipinnate or twice ternate. Lts. ovate or cordate, unequal, crenato-serrate, entire or 2–3-cleft. *Bracts sometimes wanting.* Rays rough inside. *Fl. yellow with purple border*; primary ridges of Fr. hispid ! **p.** 7, 8. *Mountain thickets.* On the Krimm at Laybach. Monte Maggiore, Istr.

4. **Gaudinii.** Stem striped, smooth. L. ternato-bipinnate or twice ternate. Lts. cordate, unequal, crenato-serrate, entire or 2–3-cleft. Bracts sometimes wanting. Rays smooth. Pet. subrotundo-obcordate, *yellow with a purple border !* **p.** 8, 9. Hinter Rhein. s. Tyrol. Monte Generoso. n. e. Alps of It.

5. **alpinum.** "Stem terete, striped, smooth. L. ternato-bipinnate or twice ternate. Lts. ovate, unequal, serrate, entire or 2–3-cleft. Umbel fastigiate. Rays smooth. Pet. broadly obcordate, with a short claw, *white.* **p.** 7, 8. *Woods and thickets.* Lower Carniola."—Koch. *Seems to differ from* L. Gaudinii *only in colour of flowers.*

6. **garganicum.** "Glaucous, smooth. L. coriaceous : lower tripinnate ; Lts. broad ovate ; lateral obliquely cordate : upper bipinnate or ternate ; Lts. subrotund. Bracts ovato-lanceolate, acuminate, with broad membranous margin. Fr. oblong, narrowed at each end. **p.** 5. Coppa di Mezzo in Gargano."—Bert.

7. **siculum.** "Glaucous. L. somewhat tripinnate. Lts. subrotundo-ovate, mucronate, entire and trifid. Bracts lanceolate, acuminate, with broad membranous margin. Styles recurved, equal to stylopode. **p.** 6. *Calc. hills.*" Madonie.—Bert. *This and the preceding are compared by Bert. to* L. Siler, *and, like it, have a rough or finely serrulate, cartilaginous margin to L.*

B. *Lts. or Segments lanceolate or elliptic.*

8. **Siler.** L. smooth, tripinnate. Lts. lanceolate or elliptic, entire, but with a rough or finely serrulate, cartilaginous margin ; the terminal frequently confluent. Primary veins oblique. Bracts lineari-lanceolate, with membranous margin. Rays 20–30, rough inside. **p.** 7, 8. *Mountain thickets.* Alps. Apenn. *In my specimens the L. are ternate, tripinnate, or twice ternate, bipinnate.*

9. **peucedanoides.** L. ternato-2–3-pinnate, quite smooth. Lts. lineari-lanceolate or linear, undivided. Primary veins parallel to margin. Bracts setaceous. Rays 5–10. **p.** 6, 7. *Mountain woods.* e. Alps.

10. **prutenicum.** Stem furrowed, hispid at base. L. bipinnate. Lts. pinnatifid. Segments lanceolate, rough on margin. Bracts lanceolate, with membranous margin. Rays rough inside. Primary ridges of Fr. hispid ! **p.** 7, 8. *Moist shade.* n. e. Fr. G. n. It.

C. *Lts. linear or oblong.*

11. **nitidum.** Stem furrowed, hirsute. L. bipinnate. Nerves underneath, Stalks, and Stem setoso-pilose. Sheaths smooth. Lts. oblong, pinnatifid, acutely serrate, hispid beneath. Bracts lanceolate, trifid and incise at top. Margin membranous. **b. p.** 7, 8. *Mountain rocks.* s. Tyr. Valtel. Brescia. Lecco.

12. **hirsutum.** Stem striped, smooth. L. hairy, supradecompound. Lts. pinnatifido-multifid. Segments linear. Margin entire. Bracts with a membranous, ciliate margin. **p.** 7, 8, *High valleys.* s. Alps.

13. **cynapiifolium.** "Smooth. Stem striped, hollow. L. supradecompound. Lts. pinnatifid. Segments linear, mucronate. Sheaths broad. Bracts with a membranous, finely ciliolate margin. Fr. ovate. **p.** 6, 7. Vezzarone, Cors."—Bert.

D. *Lts. cuneate.*

14. **gallicum.** Stem striped, solid. Branches spreading. L. tripinnate. Lts. cuneiform, pinnatifid. Divisions somewhat lobed, each lobe ending in 3–5 teeth. Bracts reflexed. Fr. truncate at each end. **p.** 7, 8. Dau. Prov. marit. Alps. Apenn.

Krapfii.
verticillatum

Tribe X. *DAUCINEÆ.*

330. DAUCUS.

I copy this genus from Bertoloni, who seems to have all the species which occur within my limits : at the same time I must confess my utter inability to identify his plants, or to form any arrangement by which such an endeavour may be facilitated : such as it is, however, it is the best account of the European species which exists. In all the specimens which I possess, the lower L. are bipinnate, and the Lts. pinnatifid and laciniate.

1. **Carota.** Lts. of lower L. inciso-dentate. Divisions of upper L. narrow linear. General bracts pinnatifid; partial linear, entire and trifid. Fr. ovoid. Prickles (separate, Bab.) hardly equalling the diameter of the fruit, terminating in a simple (rarely forked), somewhat hooked awn. Pet. white or pink, radiant. **b.** 7–9. *Pastures.*

2. **setulosus.** Lower L. bipinnate. Segments of Lts. short and narrow, somewhat bristly. General bracts pinnatifid; partial simple: both lineari-setaceous, ciliato-spinulose. Fr. oblong. Wings of the Ridges hardly sensible. Prickles as long as or longer than diameter of fruit, terminating in a minute star. **b.** 6, 7. Ischia. Puteoli. Calabria.

3. **parviflorus.** Stem tubercled, somewhat hirsute. Lower L. remotely bipinnate. Lts. cuneato-oblong, pinnatifid at base, inciso-dentate at top; upper pinnate, somewhat falcate. Bracts pinnatifid. Segments linear, acuminate, entire or trifid. Fr. oblongo-cylindrical, covered with short hairs. Prickles short, separate, peltato-glochidiate. Fl. small, all alike. **b.** 6, 7. *Fields.* Sarzana. Brittany?

4. **gibbosus.** Stem hispid and scaber. Lower L. bipinnate. Lts. pinnatifid. Segments lanceolate, entire and incise. Receptacle of Umbel hemispherical. General bracts pinnatifid: segments linear, shorter than umbel. Partial bracts simple, with an external callus at the base. Rays connivent when in fruit. Fr. oblong. Prickles subulate, separate, hardly thickened at base, glochidiate, twice as long as width of fruit. Pet. small, *white*. **b.** 5, 6. Island of Volcano.

5. **foliosus.** Stem hirsute at base, rough above. Lowest L. somewhat tripinnate; others bipinnate: Lts. of all cuneato-ovate, acute, inciso-dentate. General bracts bipinnatifid, equalling umbel; partial linear, entire or trifid, hispid, ciliate, exceeding umbellule. Fr. ovoid. Prickles subulate, separate, hardly thickened at base, glochidiate, as long as width of fruit. Fl. white or pink. **b.** 5, 6. Æolian Islands.

6. **Bocconi.** Root-L. bipinnate, shining above, hirsute beneath and on the stalks. Lts. cuneato-ovate, obtuse, laciniato-dentate, with short and broad segments. General bracts undivided or trifid, linear, much shorter than umbel; partial linear, acuminate, entire or trifid. Fr. ovoid. Prickles dilated at base, minutely glochidiate, about as long as width of fruit. Fl. white or pink. **b.** 6, 7. *Shore.* Mondello in Sie.

7. **maximus.** Stem and L.-stalks hirsute. Lower L. tripinnate. Lts. ovate, acute, inciso-dentate. Umbel large and of many rays, on a dilated receptacle. General bracts numerous, pinnatifid. Segments linear. Outer partial bracts trifid or pinnatifid, much exceeding umbellule. Fr. ovoid, hairy. Prickles subulate, separate, glochidiate, much shorter than width of fruit. Fl. white, very radiant. **b.** 4, 5. Sard. *This is probably the origin of the cultivated Carrot.*

8. **hispidus.** Stem covered in lower part with deflexed strigæ. Lower L. tripinnate. Lts. cuneato-ovate, obtuse, inciso-dentate. General bracts pinnatifid, segments short; partial lanceolato-linear, acuminate, entire or trifid. Fr. ellipsoid. Prickles separate, glochidiate, somewhat longer than width of fruit. **b.** 7, 8. *Rocky shores.* Cuma. Dieppe and Tréport: *perhaps not the same, but the French plant appears to be the* D. maritimus *of Withering, and of our chalky coasts.*

9. **Gingidium.** Hairless. Stem erect. Lower L. bipinnate. Lts. somewhat fleshy, shining, cuneato-ovate, inciso-dentate. General bracts pinnatifid, segments linear; partial lanceolate, with wide membranous margin, ciliate, entire or trifid, as long as umbellule. Fr. ovoid. Prickles subulate, separate, somewhat incurved, naked, simple at the top, shorter than width of fruit. **b.** 6–9. *Shores* of Italy.

β. All Lts. pinnatifido-dentate, with narrow segments.

γ. Stem and L.-stalk hispid. L. sometimes hairy on both sides. *D. maritimus* of Smith; *D. gummifer* of Savi and Gussone.

δ. Stem decumbent, rough. Segments of L. short, lanceolate, mucronulate. *D. maritimus* of DC. and of Gussone (*not of Withering*).

Bertoloni inserts the term *hairless* (glaber) in the specific character, and at the end of the detailed description adds, "tota planta glaberrima;" yet he intends it to include *D. maritimus* of Smith, which in my specimens is always rough with hairs. The upper face of the L. is hairless, or nearly so, through all the genus. Bertoloni says the prickles are distinct, and Babington seems to consider them so in Smith's plant; but in my Cornish specimens they are evidently united at the base. This character varies even on the same individual; and it is to be observed that those on the lateral ridges are more united than those on the dorsal, and those at the top of the fruit than those near its base. This and *D. Carota* are, according to Bertoloni, the only species of which the prickles are not glochidiate; yet even in these they end abruptly, and it is difficult, at least in dried specimens, to say how many little points proceed from these abrupt terminations. De Candolle expressly assigns to *D. Gingidium* prickles with glochidiate heads.

10. **siculus.** Main Stem short. Branches long, divaricate. Lower L. somewhat tripinnate. Lts. fleshy, ovate, inciso-dentate. General bracts trifid; partial lanceolate, entire or trifid. Fr. ovoid. Prickles dilated at base and somewhat confluent, glochidiate, somewhat exceeding the width of the fruit. Pet. small, white or reddish. **b.** 4–6. *Stony shores.* Trapani. Sard.

11. **dentatus.** Stem hirsute at the base; upper part very rough. Lower L. tripinnate. Lts. ovate, acute, inciso-dentate. Receptacle of Umbel large, convex. General bracts pinnatifid, segments linear; partial lanceolate, entire or trifid. Fr. oblong. Prickles dilated at base, much shorter than width of fruit; the little points at the top deciduous. Pet. small, white. **b.** 6, 7. *Rocks of sea-shore.* Sard.

12. **mauritanicus.** Stem hirsute. Lower L. tripinnate, triangular, acuminate; the first pinnæ spreading at right angles. Lts. lanceolate, acute, inciso-dentate. Receptacle of Umbel large, convex. General bracts pinnatifid, segments linear; partial lanceolate, entire or trifid. Fr. ellipsoid, small. Prickles subulate, separate, somewhat dilated at base, and with 1–3 hooked points at the top, hardly equal to width of fruit. **b.** 4, 5. Miseno, Lipari Islands. Capri. *Between* hispidus *and* Gingidium.

13. **gummifer.** Stem very hirsute, swelling at the joinings. Lower L. broad, triangular, acute, tripinnate. Lts. ovate, pinnatifido-dentate, shining above. General bracts bipinnatifid, exceeding umbel, segments ovato-lanceolate, mucronate; partial ovate, entire or 3–5-cleft, with a broad membranous margin, densely ciliate. "Fr. ovate. Prickles rigid, comb-like, with entire, acute terminations."—DC., *under name of* hispanicus. **b.** 5, 6. *Marit. rocks.* La Cava. Genoa.

14. **australis.** Stem erect, rough. Lower L. tripinnate; outline ovate. Lts. lanceolate, acute, narrowly pinnatifido-dentate, hairy beneath and on the stalks. Receptacle of Umbel large, convex. General bracts shorter than umbel, trifid or pinnatifid, segments linear; partial linear, somewhat exceeding umbel, entire or trifid. Fr. ellipsoid. Prickles subulate, confluent, about half as long as width of fruit; terminal points deciduous. **b.** 4, 5. Ægades.

15. **Broteri.** Stem erect, rough above. Branches divaricate. Lower L. bipinnate. Lts. pinnatifid, short, with linear or lanceolate segments, sometimes incise. General bracts pinnatifid. Segments and partial bracts setaceous. Fr. elliptico-oblong, with thick, whitish ridges. Prickles somewhat dilated at base, glochidiate, nearly twice the width of fruit. **b.** 7, 8. Rome, *common.* K. Nap.

16. **muricatus.** Erect, hispid. L. uniform, somewhat tripinnate. Lts. flabellato-multipartite. Segments short, very narrow, linear, somewhat strigose. General bracts pinnatifid or trifid. ✓ Segments and partial bracts setaceous; latter equalling umbellule. Fr. ellipsoid, *silvery, sometimes brown or purplish,* compressed on the back. Ridges winged, bearing the confluent, subulate, glochidiate prickles, as long as the width of fruit. Pet. radiating. **a.** 5, 6. *Fields.* Sic. Sar.

17. **aureus.** Stem erect, dichotomous, somewhat hispid. L. uniform, bipinnate. Lts. distinct, finely pinnatifid, somewhat strigose. General bracts pinnatifid, reflexed, somewhat shorter than umbel. Segments and partial bracts setaceous; the latter entire and trifid. Fr. oblong, golden, with very narrow wings. Prickles subulate, twice or three times as long as width of fruit, glochidiate. **a.** 4, 5. *Fields.* Termini.

It appears from these descriptions that in *parviflorus, maximus, dentatus,* and *australis,* the length of the prickles falls far short of the width of the full-grown fruit. In *Carota, setulosus, foliosus, Bocconi, hispidus, Gingidium*? *siculus, mauritanicus, gummifer*? and *muricatus,* they are about equal. In *gibbosus, Broteri,* and *aureus,* the prickles are at least twice as long as width of fruit.

331. ORLAYA.

1. **grandiflora.** Erect, dichotomous. L. bipinnate. ✓ Lts. pinnatifid, incise, or bipinnatifid. Bracts 3–5, scariose on the margin. Radiant Pet. 3 or 4 times as long as germen.

Prickles simple, curved at the top. **a.** 6, 7. *Fields.* m. and s. Eur.

2. **platycarpa.** Erect. Branches divaricate, hispid. L. bipinnate. Lts. pinnatifid, incise, or bipinnatifid. Bracts 3, scariose on the margin. Radiant Pet. hardly longer than germen. Prickles simple, hooked. **a.** 4–6. *Fields.* s. Fr. Nice.

3. **maritima.** Diffuse, villous. L. bipinnate. Lts. pinnatifid, trifid. Bracts linear, not scariose. Fl. hardly radiant. Prickles of Fr. glochidiate. **a.** 5. *Sandy shores* of Mdt.; *not of Adr.*

Tribe XI. *CAUCALINEÆ.*

332. CAUCALIS.

1. **daucoides.** Prickles of Fr. in a single series, conical at base, hooked, as long as width of fruit. L. bipinnate, pinnatifid. **a.** 5–7. *Corn.* m. and s. Eur.

2. **muricata.** Prickles of Fr. in a single series; cylindrical at base, terminating in a bent cusp, much shorter than width of fruit. L. bipinnate, pinnatifid. **a.** 6, 7. *Corn.* Neudorf near Vienna.

3. **leptophylla.** Prickles of Fr. in a triple series, rough, glochidiate. Rays 2 or 3. L. bipinnate, pinnatifid. **a.** 6, 7. *Corn.* Fr. G. n. w. It. *rare.*

4. **latifolia.** Prickles of Fr. in a double or triple series, rough, glochidiate. Rays 2–3. L. pinnate: upper pairs confluent on a cuneate base. **a.** 7, 8. *Corn.* m. and s. Eur.

333. TORILIS.

1. **Anthriscus.** Umbels on long stalks. General bracts 4 or 5, lineari-subulate. Rays 5–7. Prickles of Fr. not glochidiate. L. bipinnate. Lts. inciso-serrate. **a.** 6, 7. *Hedges and thickets.*

2. **neglecta.** Umbels on long stalks. General bracts 0, or of 1 L. Rays 7–10. Radiant Pet. twice germen. Styles much longer than stylopode. Prickles of Fr. glochidiate. Branches spreading. L. bipinnate. Lts. inciso-serrate. **a.** 7, 8. *Fields and borders of woods.* lower Austria. *Var. of* T. infesta, *according to Bert.*

3. **infesta.** Umbels on long stalks. General bracts 1 or 0. Rays 5–7. Pet. not longer than germen. Styles not twice stylopode. Prickles of Fr. glochidiate. Stem much branched from base. Branches divaricate. L. bipinnate, inciso-serrate, terminal Lts. often much lengthened. **a. b.** 7. *Fields.*

4. **heterophylla.** Umbels on long stalks. General bracts 1 or 0. Rays 2–3. Pet. not more than half as long as germen. Prickles of Fr. glochidiate. Branches of stem somewhat spreading. Lower L. bipinnate; upper ternate. Upper Lts. very narrow, and generally much lengthened. **a.** 4, 5. *Fields.* Trieste. Istria. It. s. Fr. *Perhaps a var. of* T. infesta.

nodosa

Tribe XII. *ELÆOSELINEÆ.*

334. ELÆOSELINUM.

1. **asclepium.** L. tripinnate. Lts. digitato-multifid. Segments decussate, setaceous, very short. General and partial bracts 0, or very few and short. Wings of Fr. 4, with rarely 4 very narrow additional ones. **p.** 6, 7. Capri. Cal. Sic. *I put this with* Elæoselinum, *on the authority of Bert. DC. makes it a* Thapsia.

2. **meoides.** Root-L. erect. Stalks strigose. *Segments of L. only half as long as in the preceding species.* Umbels with general and partial bracts. Wings of Fr. 8. **p.** 9, 10. Sard. Sic.

Lagoecia.

Tribe XIII. *SCANDICINEÆ.*

335. SCANDIX.

1. **Pecten-Veneris.** Beak compressed dorsally, with two lines of bristles 3 or 4 times as long as fruit. Partial bracts incise. **a.** 6–9. *Fields.*

2. **brachycarpa.** Beak compressed dorsally, hispid on the sutures, about as long as fruit. Partial bracts entire. **a.** 5, 6. *Open hills.* Madonie. Lucania.

3. **australis.** Beak compressed laterally; everywhere hispid, about one and a half times as long as the fruit. Partial bracts ovate, acute, with about two teeth. **a.** 5, 6. *Barren fields.* s. Fr. isl. of Osero. Sic. Sard.

hispanica

336. ANTHRISCUS.

1. **sylvestris.** Fr. ovato-lanceolate, smooth or with a few hairless tubercles. Ribbed beak not one-sixth of length of seed. Style longer

than stylopode. Stem hirsute at base; upper part hairless. L. bi-tripinnate, pinnatifid. Partial bracts 5, with long ciliæ. **p.** 5, 7. *Meadows and hedges.*

β. *alpestris*, Wimm. L. bipinnate. Lts. less divided.

γ. *alpinus*, Vill. L. bipinnate. Lts. cut into distant linear segments.

2. **torquata.** Fr. shining, surrounded at base with a row of small ciliæ. Stem smooth, somewhat striped. L. bipinnate. Lts. lanceolato-ovate, somewhat inciso-dentate. Rays smooth. Partial bracts deflexed, lanceolate, acuminate, ciliate. Pet. radiant. **p.** Prov. Pdm.—Duby. *Var. of* sylvestris? *Not noticed by Bert.*

3. **sicula.** Fr. cylindrico-lanceolate, scattered over with a few spinescent tubercles. Ribbed beak not one-sixth of length of seed. Styles divergent. (Fr. smooth, surrounded at base with a row of small ciliæ, DC.) Stem furrowed, hairless. L. tripinnate. Lts. ovato-oblong, uniform, pinnatifido-incise. Partial bracts 5, ovate, ciliate, reflexed. **p.** 4, 5. *Shade.* Lucania. Cal. Sic.—Bert.

4. **nemorosa.** Fr. oblong. Tubercles surmounted with a small bristle. Ribbed beak not one-sixth of length of seed. Style longer than stylopode. Stem hirsute below; upper part hairless. L. bipinnate, pinnatifid. Lower segments incise. Partial bracts 5, with long ciliæ. **p.** 5, 6. *Shade.* Frankf. on Oder.—Koch.

5. **fumarioides.** Fr. lineari-oblong. Tubercles surmounted with a bristle. Ribbed beak not one-sixth of length of fruit. Stem and L. covered with short silky hairs. L. bi-tripinnate, pinnatifid, and incise. **p.** 5, 6. *Hills.* On the Nanas and Planina in Carniola, and on Monte Maggiore in Istria.—Koch.

6. **trichosperma.** Fr. linear, setuloso-muricate. Ribbed beak as long as one-third of seed. Style longer than stylopode. Stem hairy at joinings. L. tripinnate, pinnatifid. Partial bracts 2–4. **a.** 5. *Hedges.* Boh.—Koch. A. longirostris *of Bert. seems to be the same plant.* Sard.

7. **Cerefolium.** Fr. lineari-lanceolate, quite smooth. Ribbed beak as long as one-third of seed. Style longer than stylopode. Stem hairy at joinings. L. tripinnate, pinnatifid. Umbels generally nearly sessile. Partial bracts half round, 2 or 3, reflexed. **a.** 5, 6. *Fields.* s. Europe.

8. **vulgaris.** Fr. ovate, covered with subulate, incurved prickles. Ribbed beak about one-fourth of seed. Stigma nearly sessile. Stem smooth. L. tripinnate, pinnatifid. Partial bracts half round, 2 or 3. **a.** 5, 6. *Cult. and uncult.* ✓

337. PHYSOCAULIS.

1. **nodosus.** Ridges not marked. Stem hollow, rough, swelling at the joinings. L. triternate. Lts. ovate, pinnatifido-incise and dentate. **a.** *Thickets.* Anjou. Nice. Fiume. Corsica. ✓

338. CHÆROPHYLLUM.

1. **temulum.** Style recurved. Stem rough, spotty, swelling at the joinings. L. bipinnate, somewhat hirsute. Lts. ovato-oblong, pinnatifid. Lobes obtuse. General bracts usually 0; partial ovate, with a scariose, ciliate margin, reflexed. Young umbels nodding. **b.** 6, 7. *Hedges and thickets.* ✓

2. **bulbosum.** Style recurved. Stem retrorsely hairy at base, swelled at joinings, smooth above. L. supradecompound. Lts. multifid. Segments linear, acute. Partial bracts smooth, lanceolate, cuspidate. **b.** 6, 7. *Thickets and banks.* G. Alsace. ✓

3. **aureum.** Styles at last recurved. Stem hirsute, angular, somewhat swelling at joinings. L. tripinnate. Lts. lanceolate, on an ovate base, pinnatifid at base, inciso-serrate, attenuate upwards. (Fr. three times as long as broad, DC.) **p.** 6–8. *Hills.* m. Eur. ✓

β. *maculatum.* Fr. six times as long as broad.—DC.

4. **elegans.** "Styles nearly erect, many times longer than stylopode. Stem evenly thick. L. bipinnate, pinnatifid. Segments lanceolate, inciso-serrate; the lower pinnatifid. Partial bracts long, entirely membranous, lanceolato-linear, acuminate, ciliate. Pet. ciliate. Seed-bearer cloven to base. **p.** 7, 8. *Alpine torrents,* foot of St. Bernard. Vall."—Koch.

5. **Villarsii.** "Styles erect, many times longer than stylopode. Stem evenly thick. L. bipinnate, pinnatifid. Segments lanceolate, inciso-serrate; the lower pinnatifid. Partial bracts lanceolate. Acumen with a membranous margin, ciliate. Pet. ciliate. Seed-bearer cloven to the base. **p.** 6, 7. *Mountain meadows and woods.* Bav. Alps. Tyr. Sty. Sw."—Koch.

6. **magellense.** Stem erect, hispid at

base. Hairs reflexed. L. bipinnate. Lts. oblong, pinnatifid. Segments lanceolate, acute, inciso-dentate. Fr. cylindrical. Styles rigid, persistent, divergent. (*Differs from* C. hirsutum *chiefly in its longer and thicker fruit*, DC.) **p.** 7, 8. Monte Magella. Gran Sasso.

✓ 7. **hirsutum.** Styles erect, many times longer than stylopode. Stem hollow, evenly thick. Hairs deflexed. L. twice ternate. Lts. ovate, trifid or pinnatifid. Segments inciso-serrate. Partial bracts elliptico-lanceolate, acuminate, herbaceous, ciliate. Pet. ciliate. Seed-bearer cloven only at the top. **p.** 6–8. *Shady mountains.* m. and s. Eur.

✓ 8. **aromaticum.** Styles divaricate, longer than conical stylopode. Stem hairy under joinings. L. bi-triternate. Lts. undivided, ovali-oblong, acuminate, serrate. **p.** 7, 8. *Shade.* e. G. Apenn. of Modena and Ferrara.

339. BIASOLETTIA.

1. **tuberosa.** Tubers subrotund. Stem terminating in 2 or 3 umbels, each of about 10 rays. Bracts not reflexed. L. bipinnate, pinnatipartite. Segments somewhat rough on margin: those of lower L. lanceolate; of upper linear. **p.** 7, 8. Monte Maggiore. Istria. Monte Magella. *Habit of* Chærophyllum, Koch; *of* Bunium, Bert., *who calls it* Bunium cynapioides.

340. MYRRHIS.

✓ 1. **odorata.** L. tripinnate, pinnatifido-serrate, acute, villous beneath. Partial bracts lanceolato-subulate. **p.** 6. *Woods.* n. Eng. Fr. Alps.

341. MOLOPOSPERMUM.

1. **cicutarium.** L. tripinnate. Lts. long, acuminate, decursively pinnatifid. **p.** 7, 8. *Rugged mountains.* Pyr. Cev. Alps.

342. MALABAILA.

1. **Hacquetii.** L. bipinnate, pinnatifid, incise. **p.** 6, 7. Golak and other mountains between Laybach and Idria. *Referred by DC. to* Pleurospermum austriacum.

343. CACHRYS.

✓ 1. **lævigata.** Fr. oval, smooth. Ridges hardly distinguishable. Cal. 0. L. decompound. Lts. multifid, lineari-setaceous, divaricate. General and partial bracts few, entire. **p.** 5, 6. *Rocky hills.* mdt. Fr. Nice.

344. PRANGOS.

1. **ferulacea.** L. supradecompound. Segments lineari-subulate, divaricate, with sharp tubercles on keel. Fr. *ovato*-oblong. Wings entire, somewhat undulate. **p.** 5, 6. *Mountain pastures.* Sic. s. It.

β. *cylindracea.* Fr. cylindrical. Dirupata di Moreno, Cal.

345. LOPHOCACHRYS.

1. **echinophora.** L. ternately decompound. Lts. linear, rough on keel and margin. Bracts undivided. Fr. tubercled. Ridges with a tubercled crest. **p.** 6, 7. *Shores.* Cal. Sic.

β. *pungens.* Lts. very long and slender; edges rolled in. Cal.

346. ÆGOMARATHRON.

1. **libanotis.** "Fr. with 5 thick, very obtuse ridges. Cal. of 5 teeth. L. decompound. Lts. trifid, linear, somewhat pungent. Upper L. opposite; uppermost trifid. Bracts many, undivided. **p.** Sic."—DC. *According to Bertoloni*, Cachrys libanotis, *Linn., and* Cachrys sicula γ *of Gussone* (*both quoted by DC.*), *belong to* Prangos ferulacea, *and consequently have a fruit with narrow-winged ridges.* Cachrys libanotis *of DC. is not referred to by Bert.*

2. **pterochlæna.** "L. multisect. Laciniæ lineari-filiform, divaricate. General bracts of central umbel multisect; of lateral umbels and of umbellules quite undivided. Fruit nearly globose. Ridges thick, tubercled. Furrows very deep and narrow. Calyx of 5 teeth. **p.** Sicily?"—DC.

347. ECHINOPHORA.

1. **spinosa.** L. pinnate, pinnatifid. Segments subulate, channeled, spinescent. Bracts entire, spinescent. Fl. equal, hairless, *white.* **p.** 6–8. *Sandy shores* of Mdt.

2. **tenuifolia.** L. bipinnate. Lts. pinnatifid or incise, cuneate, channeled, toothed at top, unarmed. Fl. somewhat radiant, bearded, *yellow.* **p.** 9, 10. *Sandy hills.* Sic. Apul.

348. PHYSOSPERMUM.

1. **aquilegifolium.** Lower L. triternate, smooth. Lts. cuneate, inciso-dentate. Uppermost L. numerous, reduced to entire stipuliform sheaths. **p.** 7, 8. *Rough woods.* Italy.

2. **cornubiense.** Lower L. triternate, smooth. Lts. cuneato-lanceolate, inciso-dentate. Sheaths of upper L. bearing 1–3 linear Lts. **p.** 7. *Thickets, and among furze.* Cornwall.

3. **acteifolium.** Root-L. triternate. Lts. oblong, lobed, unequally serrate, rough beneath. Stem-L. ternate. Lts. trifid, coarsely serrate. Upper part of Stem nearly leafless. Branches alternate and verticillate. **p.** 6, 7. *Moist shady rocks.* Madonie. Gargano.

349. LECOKIA.

1. **cretica.** L. tripinnate. Lts. ovate, dentate. *Has the habit of* Angelica. **p.** 6, 7. Villa Pamfili, Rome.

350. PLEUROSPERMUM.

1. **austriacum.** Vittæ solitary. Ridges somewhat blunt. L. bipinnate, pinnatifid, incise. **p.** 6, 7. *Mountains.* Dau. Prov. Sw. Austria. ✓

351. CONIUM.

1. **maculatum.** Partial bracts shorter than umbellule. L. decompound. **b.** 7, 8. *Rubbish.*

352. MAGYDARIS.

1. **tomentosa.** L. pinnate. Lts. 3–5, broad ovate, dentate, incise: the ultimate confluent, downy beneath. Fr. tomentose. **p.** Sic.? *L. like those of* Heracleum Sphondylium.

2. **panacina.** L. stalked, some undivided, elliptico-oblong, others pinnate: the ultimate Lts. confluent. Nerves and Stalks rough. General and partial bracts many, deflexed, undivided. Fr. villous. **p.** 5, 6. *Grassy mountains.* Sic.? *Resembles in appearance* Kundmannia sicula. *Not admitted by Bert.*

353. COLLADONIA.

1. **angustifolia.** Segments of lower L. lanceolate; of upper linear, long: all acutely serrate. Fr. oblong. **p.** 6. Tricarico in Luc. Gravina in Apulia.

354. SMYRNIUM.

1. **Olusatrum.** Stem-L. ternate. Lts. ovate, serrate. Partial bracts very short. **b.** 5. *Banks. Not in G.* ✓

2. **rotundifolium.** Stem-L. amplexicaul, nearly circular, entire. **b.** 5. *Hills.* Apul. Cal. Cors. Sic. Tivoli.

3. **perfoliatum.** Stem somewhat winged in the upper part! Stem-L. amplexicaul, cordato-oblong, denticulate. **b.** 6. *Fields and meadows.* Prov. It. adr. G. ✓

Tribe XV. *CORIANDREÆ.*

355. BIFORA.

1. **testiculata.** Rays 3. Fl. nearly alike. Styles very short, recurved. Fr. apiculate. **a.** *Corn.* s. Fr. It. ✓

2. **radians.** Rays 5–7. Fl. radiant. Styles of Fr. very long, divaricate. Fr. obtuse. *Corn.* s. Tyr. Trieste. Istria. It.

356. CORIANDRUM.

1. **sativum.** Umbel of 5–9 rays. Fl. of Umbellules numerous, very radiant. **a. b.** 6. *Corn.* s. Fr. It. G. s. of Alps. ✓

2. **melphitense.** Umbel of 2 rays. Fl. of Umbellules numerous, of which only about 2 are fertile. Fr. slightly ribbed and wrinkled. **a.** 6. *Hills* of Amalfi.

XLIX. ARALIACEÆ.

Calyx superior or semisuperior, with 4 or 5 teeth. Æstivation of Corolla valvate. Stamens as many as divisions of corolla, and alternating with them. Germen of 2 or more cells, each with 1 style and 1 seed. Fruit a berry. Albumen fleshy. L. alternate, without stipules.

357. ADOXA.

1. **Moschatellina.** Stem erect, simple. Root-L. twice ternate. **p.** 4, 5. *Shade.*

358. HEDERA.

1. **Helix.** Stem climbing by means of root-like fibres. L. with 5 angular lobes, or ovate, acute. **S.** 10. *Woods, old walls, &c.*

β. With yellow fruit. Tombs of Appian Way.

L. CORNEÆ.

Fruit a drupe. The order in other respects resembles the *Araliaceæ*.

359. CORNUS.

✓ 1. **sanguinea.** No Involucre. Branches straight. L. opposite, ovate, green on both sides. **S.** 6, 7. *Thickets.*

✓ 2. **mas.** Involucre of 4 L. L. oval, acuminate. Umbel about as long as involucre. **S.** 3, 4. *Dry hills.* Wanting in Br. and Sic.

3. **suecica.** Herbaceous. All L. opposite, sessile, ovate, 5–7-nerved. Involucre far ✓ exceeding umbel. **p.** 6, 7. *Peaty moors.* Sc. G.

LI. LORANTHACEÆ.

Flower superior. Corolla in 4 divisions. Æstivation valvular. Stamens 4, opposite divisions of corolla; adnate to corolla. Berry of 1 cell and 1 erect seed. *Shrubby parasitical plants, with opposite leaves.*

360. VISCUM.

✓ 1. **album.** Repeatedly dichotomous. L. obovato-lanceolate. Fl. crowded, axillary, sessile. **s.S.** 5. *Parasitic, chiefly on Pomaceæ.*

✓ 2. **Oxycedri.** Stem very much branched, jointed, with a sort of cup at the top of each joint and no L. **w** *Parasitic on juniper.* Lang. Prov. I. of Cherso.

361. LORANTHUS.

1. **europæus.** Fl. diœcious. Pet. 6. Anthers adnate. Raceme terminal, simple. **s.S.** ✓ 4, 5. *Parasitic on oaks.* l. Austr. Apen.

LII. CAPRIFOLIACEÆ.

Calyx superior. Corolla of 1 petal, upon the germen. Stamens on corolla, and alternate with its lobes; in *Linnæa* didynamous. Germen 3–5-celled, with pendulous ovules. Fruit a berry, often of 1 cell.

362. SAMBUCUS.

✓ 1. **Ebulus.** Herbaceous! Cyme with 3 branches. Stipules leafy. Stem warty. All the Fl. perfect. **p.** 7. *Uncult.*

✓ 2. **nigra.** Corymb of 5 branches. L. pinnate. Lts. ovate. **s.T.** 6. *Thickets, &c.*

✓ 3. **racemosa.** Pan. ovate. Lts. oblong, acuminate, nearly equal at base. Stalks smooth. **l.S.** 4, 5. *Woods.* Wanting in Br. and Sic.

363. VIBURNUM.

✓ 1. **Tinus.** L. evergreen, quite entire, glandular on the veins beneath. Berry ovate. **S.** 3, 4. *Dry woods.* s. Eur.

✓ 2. **Lantana.** L. ovali-cordate, serrate, rugose. Young L. covered beneath with a stellate, mealy pubescence. Cyme terminal. **S.** 5. *Hedges and thickets.*

✓ 3. **Opulus.** Corymb radiate; the outer Fl. barren. L. 3-lobed, acuminate, serrate. Stalks glandular. **S.** 6, 7. *Moist woods and thickets.*

364. LONICERA.

A. *Berry solitary. Flowers ringent, sessile, in verticillate heads. Stems climbing.*

1. **implexa.** L. evergreen! upper connato-perfoliate. Terminal heads sessile. Style ✓ hairy. **s.S.** 5, 6. *Dry hills.* s. Fr. It. Istr.

2. **Caprifolium.** Upper L. connato-perfoliate; ✓ lower oblong, smooth. Heads sessile. Styles smooth. **s.S.** 5, 6. *Rough thickets.* m. and s. Eur.

3. **etrusca.** Upper L. connato-perfoliate; ✓ lower obovate, downy. Heads stalked, generally ternate. Style smooth. **s.S.** 7, 8. *Thickets.* Coasts of Mdt.

4. **Periclymenum.** L. all distinct. Heads ✓ stalked. **s.S.** 6–8. *Woods and hedges.*

B. *Stalks axillary, 2-flowered. L. never connate.*

5. **canescens.** Climbing, hoary. Berries distinct. L. stalked, cordato-ovate, evergreen. **S.** 5–9. *Shade.* In the park at Palermo.

6. **pyrenaica.** Erect, smooth. Berries distinct. L. obovato-lanceolate. Fl. nearly regular. Bracts elliptico-lanceolate, far exceeding fruit. **S.** *Summer. Calc. mountains.* Pyr. Pdm. Ravenola.

7. **Xylosteum.** Erect, pubescent. Berries hardly united at base. L. ovate, acute, very entire. Fl. equalling stalks. Bracts hardly equalling fruit. **S.** 7. *Hedges and thickets.* s. and m. Eur.

8. **nigra.** Erect. Berries laterally adhering. L. oblongo-elliptic, downy when young. Stalks many times longer than flowers. Bracts subulate, falling short of calyx. **S.** 5, 6. *Mountain woods.* Alps. Sud. Vosges. n. Apen.

9. **alpigena.** Erect. Berries united into one. L. ovali-lanceolate, acuminate, on short stalks. Stalks many times longer than flowers. **s.S.** 5, 6. *Mountains.* Alps, &c.

10. **cærulea.** Erect. Berries united into one. Styles undivided. L. oval (elliptico-oblong, Koch). Stalks shorter than flowers. **S.** 4, 5. *Mountains.* Alps. Vosges. Auv.

365. LINNÆA.

1. **borealis.** Stems trailing. L. broadly ovate, stalked. **p.** 5, 6. *Mossy pine-woods.* Sc. n. G. Tyr. Vallais. Valt. Pdm.

LIII. RUBIACEÆ.

Calyx superior. Corolla of 1 regular petal. Stamens alternate with segments of corolla. Style 1. Fruit twinned. Cells 2, each with an erect seed.

366. PUTORIA.

1. **calabrica.** Stem shrubby, branched, pubescent. L. stalked, oblong. Stipule on each side solitary. **w.** 5–7. *Calc. rocks.* Sic.

367. SHERARDIA.

1. **arvensis.** L. verticillate. Fl. terminal. **a.** 4, 5. *Fields.*

368. ASPERULA.

A. *Annual. Upper whorls of more L. than lower.*

1. **arvensis.** Fr. smooth. Lowermost L. obovate, 4–5 in a whorl; upper linear, 6–10. Fl. sessile, in terminal clusters, shorter than involucre. **a.** 5, 6. *Fields.* m. and s. Eur.

B. *Perennial. Corolla funnel-shaped.*

i. *L. in fours, ovate or elliptic.*

2. **taurina.** L. 3-nerved. Heads axillary, stalked. Bracts ciliate. Tube of Corolla very long. Fr. somewhat rough. **p.** 5, 6. *Shady hills.* s. Eur.

3. **lævigata.** Ascending, hairless. L. 1-nerved, finely rough on margin. Cymes on axillary stalks. Tube not longer than border. Fr. smooth. **p.** 6. *Woods.* s. Fr.? It.

ii. *L. in fours, rarely* 6 *in some of the whorls; upper nearly linear.*

a. *Two L. of upper whorl much smaller, or wanting.*

4. **tinctoria.** Somewhat erect. Root long, creeping, *reddish.* Fl. generally 3-cleft. Border equal to tube. Fr. smooth. **p.** 6, 7. *Sandy.* m. and s. Eur. *occ.*

5. **cynanchica.** L. smooth, margin somewhat rough: lowermost somewhat ovate. Bracts ovate or lanceolate, acuminate. Corymbs all terminal. Corolla rough, 4-cleft. Tube about equal to border. Fr. tubercled. **p.** 6, 7. *Open hills. Not in Sic.*

β. *aristata.* L. flat; upper about 3, very unequal. K. Nap.

γ. *nitens.* L. 4, awned, smooth and shining, exceeding interknots. Abr.

6. **canescens.** "L. linear, mucronate. Stems ascending. Corymbules lateral, nearly sessile, and terminal. Bracts lanceolato-subulate, mucronate. Corolla rough or hairy. *Fl. purplish.* Tube much longer than border. Fr. obsoletely tubercled, sometimes hairy. **p.** 9. *Stony.* I. of Losino in Istria."—Koch.

7. **longiflora.** "L. linear. Stems numerous, diffuse. Bracts lanceolato-subulate, cuspidate. Corolla smooth. Tube much longer

than border. Fr. granulate. **p.** 7, 8. mdt. G."—Koch. It.

b. *Upper L. in fours; all nearly equal.*

8. **suberosa.** Tufted, smooth, *glaucous.* L. longer than interknot: lowermost oval; rest lineari-lanceolate, revolute, acute. Stalks 3–4-flowered, axillary and terminal. Corolla hairless. Fr. hairless, somewhat rugose. **p.** 6. *Calc. rocks.* Madonie.

9. **pumila.** Hirsute. Stems filiform, decumbent. L. in fours: lower lanceolate; upper linear, acuminato-mucronate. Corolla hairy. Style somewhat cloven. Fr. rough. **p.** 6, 7. *Dry hills.* Madonie. Sard.

10. **neglecta.** Hirsute, tufted. Root slender. L. acute: lower ovate; upper linear. Fl. on very short stalks, in terminal fascicles. Corolla hairy. Style bipartite. Fr. hispid. **p.** 6–8. *Mountain meadows and rocks.* Abr. Sard. Sic.

11. **tomentosa.** Villous, hoary. Stem flaccid. L. in fours: lower obovate; upper linear. Margin revolute. Fl. sessile, about 3 in a cluster (8 or 10, DC.). Style divided to the middle. Fr. hirsute. Bracts hardly equalling germen. **p.** 5. *Calc. rocks.* Capri. Sard. "*Becomes hairless by cultivation.*"—Ten.

β. *commutata.* Upper part smooth. Sicily.

iii. *L. 6 or more in a whorl.*

✓ 12. **hirta.** Erect, tufted. L. in sixes, linear acute, hairy, exceeding interknot. Fl. terminal, sessile, in a sort of umbel, exceeding bracts. Fr. hairless. **p.** 6, 7. *Calc. rocks.* Pyr.

13. **hexaphylla.** "Stem slender, flaccid. L. in sixes, linear, acuminate, rough on margin. Fl. in a dense corymb, exceeding involucre of 6 linear L. Corolla slender, pointless. Fr. oblong, hairless. **p.** 6, 7. *Rocks.* Col di Tende."—Bert.

14. **rupestris.** "Stem thick, firm. L. in sixes, linear, somewhat acute. Involucre of 6 ovate L. Fr. a rough, double globe. **p.** 4, 5. *Calc. rocks.* Sic."—Bert.

C. *Perennial. Corolla campanulate. L. 6 or more in a whorl.*

✓ 15. **odorata.** L. 6–8, lanceolate, rough on margin and keel. Pan. stalked, few-flowered. Fr. with hooked bristles. **p.** 5, 6. *Woods.*

16. **Aparine.** L. about 8, with retrorse prickles on margin and keel. Fl. in a panicle. Fr. granulate. **p.** 7, 8. *Moist thickets.* Sil. and Mor.

17. **galioides.** L. about 8, rigid, linear. Margin rough, involute. Stem smooth or ✓ hairy only at base. Fl. panicled. Fr. smooth. **p.** 6, 7. *Open spots.* mdt. Fr. G. It.

369. GALIUM.

Sect. I. Fl. complete. Root perennial.

A. Fl. in a terminal panicle. Stem without recurved prickles.

- **i.** L. in fours, 3-nerved. Sp. 1–3.
- **ii.** L. more than 4 in a set on the main stem.
  - **a.** Fr. not granular. Stem 4-edged. Sp. 4–14.
  - **b.** Fr. not granular. Stem nearly round. Sp. 15–19.
  - **c.** Fr. shagreened or tubercled, not hairy. Sp. 20–23.

B. Fl. axillary. Stem without recurved prickles. Sp. 24, 25.

C. Fl. in a terminal panicle. Stem rough with recurved prickles. Sp. 26, 27.

Sect. II. Fl. complete. Root annual.

D. Fl. in terminal panicles. Sp. 28–30.

E. Fl. in axillary panicles. Sp. 31–35.

F. Fl. axillary, not panicled. Seeds oblong. Sp. 36–38.

Sect. III. Lateral Fl. barren.

G. Fl. axillary. Sp. 39–42.

Sect. I. *Flowers complete. Root perennial.*

A. *Flowers in a terminal panicle. Stem without recurved teeth or prickles.*

i. *L. in fours, 3-nerved.*

1. **rotundifolium.** *Stems diffuse, smooth.* L. ciliate. Pan. terminal. Fl. few (5–20). ✓ Fr. with hooked bristles. **p.** 7, 8. *Shady.* m. and s. Eur.

β. *ellipticum.* Stem nearly erect, hirsute. It. Islands.

2. **rubioides.** Stems diffuse. Larger L. 5-nerved at base, elliptic or lanceolate, with parabolic termination. Fl. numerous (100 or ✓ more). Fr. without hooked prickles, *much larger than in the following species.* **p.** 5, 6. *Meadows, river banks, woods.* Carinthia. Monte Argentario in Tuscany.

3. **boreale.** All L. 3-nerved, lanceolato-parabolic. *Bracts ovate, attenuate at base or* ✓ *nearly circular.* Fl. numerous. *Fr. furnished with hooked prickles.* **p.** 7, 8. *Heaths, bushy.* m. and n. Eur.

β. *hyssopifolium.* L. 3-nerved only at base. Fr. quite smooth. G. Als.

ii. *L. more than* 4 *in a set on the main stem,* 1-*nerved* (*in* G. palustre *the stem is sometimes smooth*).

a. *Fruit not granular* (*sometimes lacunoso-rugose*). *Stem firm at the base,* 4-*edged or with* 4 *prominent ribs.*

4. **insubricum.** L. obovate, dull, in sixes on stem, in fours on branches. Stems hairless, decumbent. Branches few-flowered, ending in a simply trifid umbel. (Divisions of Cor. with a filiform cusp, Gaud.) Pedicels of Fr. spreading. *Stems slender. L. very thin. Bracts mostly solitary. Fl. not more than half as large as those of* G. Mollugo. **p.** *Stony.* Canton of Tessin, Koch. *Bert. joins this to* G. Mollugo.

5. **mediterraneum.** "Stem ascending, smooth. Lower L. in fours, obovate, mucronulate; others in sixes, lineari-lanceolate, somewhat rough on margin. Stalks 2–3-cleft. Divisions of Cor. awned. **p.** ? Restonica in Cors. and in Lig."—DC. *Not in Bert.*

6. **Soleirollii.** "Softly pubescent. Hairs spreading. Lower L. in fours; upper in fives, ovato-oblong, acute. Cor. hairless: divisions with a short awn. Seeds somewhat ovate. **p.** 6. Cape Revelata in Cors. *Two or three inches long.*"—Bert.

7. **aristatum.** "Stem-L. in eights, lanceolate, mucronate. Stem erect. Pan. large. Pedicels always nearly erect. (Divisions of Cor. with a short setaceous mucro, Gaud.) **p.** 7, 8. *Rough hills.* s. G. Tyrol."—Koch. *Does not appear to be the plant of Linn.*

In this and the five following species the characters are far from satisfactory. I am fully persuaded that they do not all form a single species, but am not equally confident that I have divided them rightly. In all which I have had the opportunity of examining, the cusps of the corolla in their perfect state are slender and setaceous.

8. **erectum.** Stem weak, smooth. L. in sixes or eights, lineari-lanceolate (lanceolate, Sm.). Midrib slender, often inflated at base. (Prickles of the margin hooked, Sm.) Cor. hairless. Fr. smooth. **p.** 6, 7. *Dry hills.*

Under the name of *G. erectum* or *G. lucidum* this is said to be known throughout Europe; but no one except Sir J. E. Smith mentions any hooks to the marginal prickles, and these I never could find. Koch says that the fruit is wrinkled; Smith, that it is smooth and even. It is known from *Mollugo* by its more upright stem, more slender habit, smaller and less diffuse panicle, and somewhat glossy and narrower lower L.; but in all these particulars there are intermediate states. Smith assigns to this an acuminate cusp, while he gives to *G. Mollugo* "a tumid point, not a bristle."

9. **Mollugo.** Young stems downy. L. about 8 in a whorl, obovato-oblong, dull. Midrib slender. Branches of Pan. spreading, many-flowered. Fr.-stalks divaricate. Fr. wrinkled. **p.** 7, 8. *Hedges, thickets, and dry banks.* ✓

10. **lucidum.** "L. about 8, linear, mucronate, rigid, shining, with a strong midrib. Lower branches of Pan. spreading horizontally. Fruit-stalks divaricate. Fr. somewhat rugose. **p.** 5–7. *Barren stony.* s. Alps."—Koch.

Both DC. and Bert. refer the *G. lucidum* of Allioni (also quoted by Koch) to a variety of *G. erectum.* As I do not feel confident that the foreign *G. lucidum* is the same as our *G. erectum,* I have inserted both. *G. lucidum* should have a strong midrib, which *G. erectum,* I believe, never has.

11. **cinereum.** "Stem woody at base, much branched, smooth. L. 6–8, elliptico-linear, glaucous beneath, rigid, mucronate, often reflexed, hardly rough on the margin. Divisions of Cor. with a setaceous mucro. Fr. quite smooth. **p.** *Open.* s. Fr. It. Vall."—DC. *Referred by Koch to* G. lucidum; *by Bert. to* G. erectum. *The almost woody base of stem, which is entirely smooth, the strongly revolute margins of the L., and their thick, firm, and even midrib, persuade me that this is quite different from anything I have seen in England.*

12. **littorale.** Stem rigid. Branches crowded. L. about 8. Branches of Pan. trichotomous, erect, pubescent. Cor. hairy: divisions with a short awn. Seed somewhat ovoid. *Smell of Fl. very strong and disagreeable.* **p.** 5, 6. *Thickets on sandy shores.* Sic.

13. **verum.** Stem round in lower part, with 4 ribs, hairy. L. 8–12, linear. Margin revolute, rough above, downy beneath. Branches of Pan. nearly horizontal when in fruit. Cor. *yellow*: divisions with a very short cusp. **p.** 7, 8. *Dry banks.* ✓

β. *vero-mollugo.* Fl. *yellowish-white.* Ger.

14. **arenarium.** Prostrate, much branched, hairless. L. 6–10, lineari-oblong. Pan. somewhat cylindrical, verticillate: the Fl.-stalks very short. *Fl. yellow.* Fr. large and somewhat fleshy. **p.** 5, 6. *Sandy shores.* w. Fr. ✓

b. *Fruit not granular. Stem firm at base, nearly round and even.*

15. **purpureum.** L. 6–8, linear, very narrow, mucronate, rough on the margin. Stem much branched, woody. Fl. terminal, in threes or solitary, *purple.* Cor. apiculate. **w.** 7, 8. *Rocky calc.* It. Sw. s. Tyr. Massa. Apenn.

16. **Villarsii.** L. 4–6, hairless, somewhat fleshy. Pan. twice ternate. Fl.-stalks thick, shorter than L. Seeds very large, and, *with a high power,* appearing shagreened. Segments of Cor. without cusp. **p.** 7. *High stony.* Pyr. Dau. Mont Ventous.

17. **helveticum.** Stems procumbent, much branched. L. 6–8, nearly nerveless, flat, somewhat fleshy (rough on margin, DC.): lower obtuse. Stalks 1–3-flowered, terminal and axillary, somewhat longer than L. Segments of Cor. acute, no cusp. **p.** 7, 8. *Stony mountains.* Sw. *rare.* Mont Cenis. Tyr. *occ.* Bavaria.

18. **sylvaticum.** L. in eights, elliptic or obovato-lanceolate, obtuse, mucronate. Floral L. opposite. Stalks of Pan. capillary. Buds nodding. **p.** 6, 7. *Woods.* m. and s. Eur.

19. **linifolium.** Stem round, smooth. L. 4–8, lanceolate, acuminate. Stalks of Pan. capillary, always erect. Divisions of Cor. acute. Fr. quite smooth. **p.** 7, 8. *Mountain thickets.* Pyr. s. Alps.—DC. *Koch makes this a var. of* G. aristatum. *The round stem induces me to place it near* sylvaticum.

c. *Fruit shagreened or tubercled, not hairy. Stems very thin and weak at the base.*

20. **saxatile.** L. about 6, obovate, acute. Stems numerous, prostrate, much branched. Pan. many-flowered. Divisions of Cor. acute. **p.** 7, 8. *Heaths and stony.*

21. **sylvestre.** L. 6–8, lineari-lanceolate, broader upwards, acuminate, mucronate, one-nerved. Pan. many-flowered. Pedicels erecto-patent. Segments of Cor. acute.

α. *læve.* Without hairs in any part.

β. *alpestre.* Also hairless. All the parts more rigid and crowded.

γ. *hirtum.* (*pusillum* of Sm.; *Bocconi* of DC.) Hairy.

δ. *supinum.* L. prickly at the edge, nearly as long as panicle. **p.** 6, 7. *Rough rocky.*

The above varieties are species of DC.

22. **pumilum.** L. 6–8, linear, with a subulate extremity, a strong midrib, and a thickened, somewhat revolute margin. Stems cespitose, procumbent, 4-sided. Pan. few-flowered. Divisions of Cor. acute, without a cusp.

α. *hypnoides,* Vill. Stalks erect, 2–4-flowered.

β. *cæspitosum.* More dense and rigid. Stalks 1-flowered. **p.** 6, 7. *High open rocky.* Alps. Apenn.

23. **rubrum.** L. 6–8, lineari-lanceolate, mucronate. Pan. diffuse. Pedicels straight, capillary. Cor. *reddish,* with long, slender cusps. **p.** 6, 7. *Dry mountain pastures.* s. Europe.

β. *obliquum.* Fl. greenish-white. Dau.

B. *Flowers axillary. Stem without recurved prickles.*

24. **maritimum.** Villoso-hispid. L. 4-6; the uppermost opposite, lineari-lanceolate, acute. Stalks axillary, 1–7-flowered. Corolla externally, and Fr. hispid. Root woody. **p.** 7, 8. *Rocks on the shore.* Ste. Lucie. Nice.

25. **pyrenaicum.** L. in sixes, narrow, linear, acuminate, thin. Fl. nearly solitary, in the axils toward the ends of the branches, falling short of L. Divisions of Corolla acute, without cusps. **p.** 6. *High.* Pyr. Mountains of Carrara.

C. *Flowers in a terminal panicle. Stem rough, with reversed prickles or teeth.*

26. **uliginosum.** L. 6, lineari-lanceolate, mucronate, 1-nerved. Prickles of the margin and keel, and on the stem, retrorse. Fruit-stalks straight. Divisons of Corolla acute. **p.** 7. *Peaty meadows.*

27. **palustre.** L. 4 or 5, rarely 6, unequal, oblongo-obovate, obtuse; upper opposite; roughness (if any) spreading or recurved. Corolla without cusps. Fr. finely rugose. **p.** 7. *Wet. There are not always prickles on the stem; but the plant may be known by the L. on the branches in fours, obovato-oblong, and very unequal.*

β. *Witheringii.* L. more frequently 6. *This is probably the* montanum *of Linn.*

Sect. II. *Flowers complete. Root annual. Fruit granular or hispid. L. 1-nerved. Stem rough with reversed prickles.*

D. *Flowers in a terminal panicle.*

28. **campestre.** "Stem slender, decumbent, ascending, with retrorse prickles at the angles. L. hairless, margin with forward prickles: lower in fours, subrotundo-spatulate, stalked; upper in sixes, obversely lanceolate,

acute. Pan. somewhat dichotomous. Corolla awned. Fr. ovoideo-didymous, minutely granular. **a.** 6, 7. Cape Revelata and Monte Cagna in Cors."—Bert.

29. **parisiense.** L. 6, lanceolate, mucronate. Corolla without cusps. *Fruit rough with hooked prickles.* **a.** 5–8. *Warm, sandy or stony.* (Includes *litigiosum.*)

β. *anglicum.* Fr. without hairs. (Includes *divaricatum.*)

30. **setaceum.** L. 4–8, lineari-setaceous, rough on margin, exceeding Fl.: lower obovate, very small. Stems erect, rough at the base. Stalks slender, divaricate, trifid. Fr. covered with hooked bristles. **a.** 4, 5. *Barren, stony.* Prov. Sic. Sard.

E. *Flowers in axillary panicles.*

31. **trifidum.** L. 4, lineari-oblong, broader upwards, very obtuse, pointless, 1-nerved. Margin with reversed prickles. Stalks 1–3-flowered. Fr. reflexed, even. **p.** 7, 8. *Spongy meadows.* Styria.

32. **spurium.** Same as *Vaillantii*, except that the Fr. is hairless. **a.** 7. *Corn.* Forfar. France. Germany. Italy.

33. **Vaillantii.** L. 8, linear, prickly on margin and keel. Angles of stem prickly; knots smooth. Fr. very small, furnished with hooked prickles. *Fl. minute, yellow.* **a.** 5, 6. *Corn.* Sw. *rare.* G.

34. **Aparine.** L. 6–8, lanceolate. Keel, margin, and angles of stem armed with reflexed bristles. Stem weak (knots villous, Gau.). Fr. hispid with hooked bristles. **a.** 6, 7. *Hedges, &c.*

β. *tenerum.* Stem filiform, smooth. Gemmi. Zermatten.

35. **tricorne.** L. 8, lineari-lanceolate, mucronate, 1-nerved. Margin with backward prickles. Stems flaccid; arms reflexed. Stalks 3-flowered; in fruit recurved; longer than the warty, hairless fruit. **a.** 7–9. *Calc. fields.*

F. *Flowers axillary, not panicled. Seeds oblong.*

36. **minutulum.** Fl. solitary. Fr. spreading (never reflexed). Seeds globular. L. elliptic or obovato-elliptic. **a.** 6. *Granitic.* Island of Portquerolles near Hyères.—Jord.

Besides this, M. Jordan adds no less than nineteen new species to the genus, and alludes to some others of whose distinctness he has less confidence. The descriptions do not afford characters sufficiently definite to enable me to introduce them. He also proposes to restore several other species which have been generally rejected by modern botanists.

37. **murale.** Flower-stalks between the L. usually 1-flowered, reflexed in fruit. Fr. hispid at top. Seeds incurved. **a.** 3, 4. *Walls.* Italy. s. France.

38. **verticillatum.** Fl. in the axils, verticillate. L. in fours; upper opposite. Fr. hispid, erect. **a.** 5, 6. *Warm, dry.* Prov. Cal. Sicily.

Sect. III. *Lateral Flowers barren.*

G. *Flowers axillary.*

39. **saccharatum.** L. in sixes, lineari-lanceolate, mucronate, 1-nerved. Fruit warty. Stems flaccid, with reversed prickles. **a.** 5, 7. *Fields.* m. and s. Eur.

40. **Cruciata.** Stem hairy, simple upwards. L. ovate or elliptico-oblong, 3-nerved. Stalks branched, bracteate. Root annual. **a.** 4, 5. *Thickets, &c.*

41. **pedemontanum.** Stem simple, flaccid, with reflexed prickles, softly villous or hairless. L. 3-nerved, ovali-oblong, hispid. Stalks without bracts, 3–4-flowered, shorter than L. Fr. hairless. Root annual. **a.** 5, 6. *Sandy.* s. Eur. *occ.*

42. **vernum.** Stem simple, without reflexed prickles, hairless towards the top. L. ovate or oblong, 3-nerved. Stalks branched, smooth, without bracts. Fr. smooth. Root perennial. **p.** 5, 6. *Shade and moist meadows.* s. Eur.

370. VALANTIA.

1. **muralis.** Stem decumbent. L. nearly hairless. Fr. with a rigid crown, otherwise smooth. **a.** 4, 5. *Walls, &c.* s. Eur.

2. **hispida.** Stem ascending, hispid. L. ciliate. Fr. hispid. Stalk recurved. **a.** 4, 5. *Fields and hedges.* Pdm. Cal.

371. CRUCIANELLA.

1. **molluginoides.** Heads somewhat panicled. Fl. 5-cleft. L. 6–12, lineari-lanceolate, rough. Bracts ovato-lanceolate, acuminate, with villous margin. **p.** 7, 8. *Mountains.* On the Kahlenberg near Laybach.

2. **maritima.** Woody, branched. Fl. 5-cleft, in an ovato-oblong head. L. in fours,

ovato-lanceolate, rigid, mucronate, with thickened margin. Outer bracts larger; inner compressed, keeled: all ciliate. **w.** 5. *Sandy shores.* mdt. Fr. w. I. Sic. Cors.

3. **rupestris.** Woody, much branched, ascending. L. in fours, small, lanceolate, mucronate, with a thickened margin. Bracts equal, lanceolate: outer not ciliate; inner concave, ciliate. **w.** 5, 6. *Calc. marit. rocks.* Lopadusa, Malta.

4. **suffulta.** Fl. 4–5-cleft, with long cusps, in an oblong 4-rowed spike. L. in fours or fives; margin closely revolute: upper whorl close to spike. Bracts separate, denticulate: inner smaller. **a.** 7. *Dry fields.* Le Puy. —J. W.

✓ 5. **angustifolia.** Fl. 4-cleft, in a linear 4-rowed spike. L. in sixes, rough. Margin revolute. Bracts nearly or quite sessile, nearly equal, smooth on margin. **a.** 6, 7. *Dry stony.* Coasts of Mdt.

✓ 6. **monspeliaca.** Fl. 4-cleft, in a very long, linear spike. Lower L. in fours, obovate; upper in about sixes, lineari-lanceolate. Bracts united for nearly half their length, ciliate. **a.** 6. *Dry.* mdt. Fr. w. It. Sic.

✓ *It does not appear that the* C. latifolia, *Linn., with all L. in fours, and only a very short straight cusp to the divisions of corolla, has been found in Fr. or It.*

372. RUBIA.

A. *Annual. Veins of L. prominent beneath.*

✓ 1. **tinctorum.** L. 4–6, lanceolate. Divisions of Corolla with an acute callus. **p.** 6, 7. *Escapes.* s. Eur.

B. *Perennial. Veins of L. not prominent beneath.*

2. **longifolia.** "Herbaceous. L. 4–6, lineari-lanceolate, acuminate, smooth above, prickly on margin and on nerve beneath. Angles of stem prickly. Flower-stalks trichotomous. Divisions of Corolla acuminate, not abruptly cuspidate. **p.** 7. Cors."—DC.

✓ 3. **peregrina.** L. 4–6, elliptic or lanceolate. Divisions of Corolla cuspidate. **p.** 6, 7. *Thickets. The L. vary from broad elliptic to narrow lanceolate; I have even specimens from Rome with obovate L.; and it is probable that* longifolia *and* lucida *are only varieties of this.*

β. Bocconi. L. in fours, ovate, shining above.

4. **lucida.** "A span long. L. small, obovate, mucronulate. *Bracts very small.* Divisions of Corolla lanceolate, acuminato-aristate. **p.** 4, 5. Cors."—BERT.

LIV. VALERIANEÆ.

Calyx superior, sometimes nearly wanting, sometimes of simple teeth, sometimes involute and at last expanding into a feathery crest. Corolla of one petal, on the germen. Stamens 1 to 4, inserted on tube of corolla. Capsule with one productive cell and one pendulous seed.

373. FEDIA.

A. *Flowers ringent.*

✓ 1. **Cornucopiæ.** Upper L. sessile. Fl. in dichotomous heads. Fruit-stalks thickening upwards. **a.** *Springs, sandy.* Nap. Sic.

B. *Flowers nearly regular.*

i. *Fruit with a corky mass at the back!*

✓ 2. **olitoria.** Fr. compressed, oblong: barren cells without a furrow: the Dissepiment imperfect. Bracts leafy, dentato-ciliate. **a.** 4–6. *Cult.*

3. **gibbosa.** Fr. gibbous (plano-convex): barren cells each with furrow at the back: Dissepiment complete. Bracts quite entire. **a.** 4, 5. *Mountain pastures.* Sic.

ii. *No corky mass. Two barren cells.*

a. *Barren cells nearly or quite separate.*

* *Fruit without a distinct crown.*

4. **turgida.** Fr. spherical, with a sector cut out. Crown 0. Fl. in heads. **a.** 5. *Uncult.* Rome.

5. **carinata.** Fr. oblong, boat-shaped, with a simple blunt crown. Fl. in heads. **a.** 3, 4. *Cult.*

** *Crown a spreading membranous border with hooked teeth. Upper L. often pinnatifid at base.*

6. **hamata.** Crown cyathiform, hairless within, ending in 6, usually entire segments. Sinuses obtuse. **a.** 5–7. *Cult.* m. and s. Eur. (coronata *of Koch.*)

7. **brachystephana.** Crown hairless, campanulate, with 6 hooked teeth, much shorter than the capsule. **a.** 4, 5. *Corn.* Abr. —Bert. *Perhaps a variety of* F. hamata.

8. **coronata.** Crown campanulate, villous within, divided to base into 6, usually toothed segments. **a.** 5, 6. *Cult.* mdt. Fr. It. V. discoidea *of Koch.*

*** *Barren cells prolonged into teeth or horns: not forming a membranous calyx.*

9. **echinata.** Cells quite separate, each terminating in a recurved horn. Fl. in sessile heads on thickened stalks. **a.** 4, 5. s. Eur.

10. **pumila.** Fr. terminating in 3 very short teeth. Fl. in loose heads. Bracts scariose, ovate. **a.** 4–6. *Cult.* s. Fr. s. It. Sic.

b. *Barren cells* 2, *contiguous. Crown erect.*

11. **auricula.** Crown of one membranous L. Fl. distant. Upper L. inciso-dentate at base. **a.** 6–8. *Cult. Crown simple.*

β. *tridentata.* Crown 3-toothed, (*V. dentata* of DC.) V. latieuspis *of Bert. probably belongs to this.*

iii. *Barren cells* 4.

12. **vesicaria.** Cal. inflated, with minute inflexed teeth. Fl. in globular heads. **a.** 5, 6. Cape Passaro.

iv. *Barren cells wanting, or reduced to a mere nerve. Panicle somewhat fastigiate. Lower Flowers solitary.*

13. **eriocarpa.** Crown a somewhat oblique border, with 5–7 straight teeth; 3 of them nearly equal. Fr. ovoid. *Plant rigid. Fr.-stalk thickened upwards.* **a.** 5, 6. *Cult.* m. and s. Eur.

14. **dentata.** Crown of one L., erect, acute, generally toothed at base. Fr. ovoid. Upper L. toothed at base. **a.** 5–8. *Cult.*

β. *mixta.* Fr. rounder. Crown shorter.

γ. *lasiocarpa.* Fr. hairy.

15. **puberula.** Crown oblique, very short, nearly entire. Fr. ovoid, downy. Fl. corymbose. Upper L. very rarely with a tooth at the base. **a.** 4, 5. *Cult.* n. It. Sic. Cors. F. microcarpa *of Gussone appears to be the same species.*

374. CENTRANTHUS.

A. *Spur long.*

1. **angustifolius.** L. linear, very entire. Spur equalling germen. Organs twice as long as corolla. **p.** 7, 8. *Open stony.* w. Alps.

2. **ruber.** L. ovate or lanceolate: uppermost somewhat dentate. Spur half as long again as germen. Organs hardly exceeding corolla. **p.** 6–8. *Rocks and old walls.*

B. *Spur very short.*

3. **trinervis.** L. ovato-oblong, many-nerved, quite entire. Cyme corymbose. **p.** 5, 6. *Mountains.* Cors. Sard.

4. **Calcitrapa.** Root-L. lyrate or ovate, entire: upper pinnatifid. Fl. somewhat panicled. **a.** 5, 6. *Sandy or stony.* s. Fr. It. *Not in Ger. or Sw.*

375. VALERIANA.

A. *Flowers diœcious.*

i. *All L. undivided.*

1. **celtica.** L. quite entire. Root-L. oblongo-lanceolate, attenuate. Stem-L. linear, few and small. Corymbs small, disposed in a whorled spike. Fr. hirsute. Root scaly. **p.** 7, 8. *Very high granitic.* Alps.

2. **saliunca.** L. hairless. Root-L. oblongo-spatulate, attenuate, quite entire. Stem scape-like, with few and small L., which sometimes have linear teeth at base. Corymbs in a terminal head. Fr. oval, hairless. Root many-headed. **p.** 7, 8. *Very high.* Alps, *occ.* Abr.

3. **saxatilis.** L. nerved, ciliate. Root-L. oblongo-spatulate, on long stalks. Stem scape-like, with few and small L., sometimes with a linear tooth at base. Corymbs umbel-like. Fr. hairless. Root covered with fibres. **p.** 6, 7. Alps. Mountains of Carrara.

4. **supina.** L. ciliate, not toothed. Root-L. subrotundo-spatulate. Stem diffuse, leafy. Corymbs in a terminal head. Fr. hairless. Root many-headed. **p.** 7, 8. *High, moist.* Carinthia. Sty. Tyr. Belluno.

5. **elongata.** L. ovate. Root-L. stalked. Stem-L. sessile, broad at base, incise. Corymbs in a lengthened panicle. **p.** 6, 7. *Moist, stony.* e. Alps.

6. **montana.** Primary L. rounded; those of barren shoots ovate, on long stalks; those of stem ovate, acuminate. Teeth attenuate. Stem erect. Corymbs in a short panicle. Root many-headed. **p.** 6–8. *Mountains.* Alps. Pyr. Apenn.

ii. *Root-L. undivided. Stem-L. with one or two auricles on each side of base.*

✓ 7. **tripteris.** Hairless. L. dentate: lowermost rounded, on short stalks; those of barren shoots cordate, on long stalks; of stem tripartite. Lateral Lts. small. Corymbs in a terminal panicle. **p.** 5–8. *Rocky mountains.*

✓ 8. **pyrenaica.** Pubescent. Lower L. stalked, cordate, unequally dentate; upper cordate, acuminate, serrate, with 1 or 2 pair of oblong, acuminate, basal lobes. **p.** 6, 7. *Shady mountains.* Pyr. Sc.

✓ 9. **dioica.** Hairless, erect. L. of root oval or subrotundo-ovate; of barren shoots ovate, on long stalks. Stem-L. lyrato-pinnatifid. Lts. unequal, entire. Corymb of barren plant diffuse; of fertile compact. Fr. ovate, hairless. Root stoloniferous. **p.** 5, 6. *Boggy meadows.*

β. All L. simple. Prussia. Silesia.

iii. *Root-L. undivided; upper L. pinnate or pinnatifid.*

✓ 10. **tuberosa.** Hairless. Root-L. elliptico-oblong, stalked, attenuate, obtuse. Upper stem-L. not lyrate. Divisions linear. Corymb short. Fr. ovate, marked on each side with two silky lines. Root tuberous. **p.** 5. *Mountain meadows.* s. Eur.

11. **globulariæfolia.** Hairless, somewhat glaucous. Root-L. ovate, attenuate, quite entire. Divisions of the upper stem-L. linear. ✓ Corymb short. Fr. oblong, hairless. **p.** 6, 7. *High.* Pyr.

B. *All the Flowers perfect.*

12. **Phu.** Hairless, erect. Root-L. oblongo-lanceolate, attenuate, sometimes incise. Stem-L. pinnate, with 3 or 4 pair of quite entire acute Lts. Fr. marked on one side with two hairy lines. **p.** 5, 6. *Shade.* Belg. Sw. n. It. *rare.* Bord. Agen.

13. **sambucifolia.** Stem erect. All L. pinnate. Lts. 4–5 pair, oblong or lanceolate, ✓ dentato-serrate. Fr. hairless. Panicle thyrsoid. Root with runners. Stem single. **p.** 6–8. *Moist shade.*

14. **officinalis.** Stem erect, furrowed. Lts. 7–10 pair, lanceolate. Fr. hairless. Corymb panicled. Root with creeping runners. ✓ Stem single. **p.** 6–8. *Moist banks and woods.*

β. angustifolia. Lts. lineari-lanceolate, ciliate, obtuse.

15. **exaltata.** Stem erect, furrowed. Lts. 7–10 pair, lanceolate. Fr. hairless. Corymbs panicled. Root with many stems and no runners. **p.** 7, 8. *Moist woods.* Ger. Hallstadt.

LV. DIPSACEÆ.

Flowers in a head, surrounded by an involucrum. Calyx double: outer closely attached to the fruit; inner superior. Corolla of one petal, placed on the inner calyx. Style 1. Seed 1, pendulous.

376. DIPSACUS.

1. **fullonum.** L. sessile, inciso-crenate. Stem-L. connate, undivided. L. of Invol. spreading, decurved at the tip. Pales rigid, obovate, recurved, equalling flower. **b.** 7. *Escapes.*

✓ 2. **sylvestris.** L. sessile, crenato-serrate, not setoso-ciliate: lowermost attenuate; upper connate, undivided. Invol. incurved. Pales flexible, straight, exceeding flower. **b.** 7. *Uncult.*

β. pinnatifidus. Intermediate stem-L. pinnatifid.

✓ 3. **laciniatus.** L. sessile, setoso-ciliate: lowermost lobato-crenate, attenuate; upper pinnatifid, somewhat connate. Invol. incurved. Pales flexible, straight, exceeding flower. **b.** 7, 8. *Moist meadows and ditch-banks.* m. Europe.

4. **ferox.** Stem and L. everywhere very prickly. Root-L. sinuate; middle pinnatifid; upper undivided. Invol. spreading. Pales rigid, straight. Head of Fl. crested. **b.** 7. *Mountains.* Cors. Sard.

5. **pilosus.** L. stalked, auricled at base. Invol. deflexed, about as long as head. Pales ✓ obovate, aristato-cuspidate, ciliate, straight. **b.** 7, 8. *Moist shady.*

377. CEPHALARIA.

1. **transylvanica.** Outer Cal. with 8, acute, rigid teeth. Root-L. undivided. Stem- ✓ L. pinnatipartite. Divisions lanceolate: the terminal very large. L. of Invol. and Pales ovato-lanceolate, acuminate, ciliate. **a.** 7. *Mountains.* s. Eur. Fl. radiant, *bluish.*

2. **joppensis.** Outer Cal. with 8 short, equal teeth. Root-L. undivided. Stem-L. pinnatipartite, serrate. Heads ovate. Scales

of Invol. broadly ovate and very obtuse. Pales (very silky, DC.) obtuse, with a short mucro. Cor. nearly regular. **a.** 6–8. *Fields.* Calabria.

3. **syriaca.** Outer Cal. with 4 awned, and 4 very short teeth. L. oblongo-lanceolate, serrate. Pales with broad membranous base and long awn. *Fl. regular, pale blue.* **a.** 6, 7. *Corn.* Nismes.

4. **alpina.** Outer Cal. with 8, awned, nearly equal teeth. L. pinnate. Lts. decurved, lanceolate, unequally serrate. *Anthers with green stripe.* **p.** 7. *Mountains.* Alps. Apenn. of Pistoja.

5. **centaurioides.** Teeth of outer Cal. 4–8, sometimes obsolete. L. pinnatifid. Divisions decurrent, oblong, quite entire. Inner Pales acuminate. *Fl. yellow.* **p.** 6. Alps of Provence.

6. **leucantha.** Outer Cal. with a many-toothed, membranous crown. L. pinnatipartite. Divisions linear or oblong. Pales silky: the inner acute. **p.** 7, 8. *Uncult.* adr. G. It. s. Fr.

378. KNAUTIA.

1. **hybrida.** Inner Cal. with about 16 blunt teeth; outer with many distinct cusps. Lower L. pinnatifid, lyrate, or undivided. **a.** 6, 7. *Waste.* Mdt.

2. **sylvatica.** Inner Cal. with about 8 awned teeth; outer with many distinct callous cusps. L. lanceolate or elliptico-lanceolate, usually entire. **p.** 7, 8. *Woody hills.*

α. *sylvatica,* Koch. Upper part of Stem covered with short hairs, without glands, and long hairs intermixed. m. and s. Europe.

β. *longifolia,* Koch. Upper part of Stem covered with short glandular hairs and long hairs intermixed. e. Alps.

3. **arvensis.** Inner Cal. with about 8 awned teeth; outer with a few obscure blunt teeth. **p.** 7, 8.

β. *campestris,* Bess. Cor. not radiant.

γ. *rigidiuscula,* Koch. Stem-L. pinnatifid, smooth and shining; the first root-L. and upper stem-L. undivided.

δ. *collina,* Duby. L. all pinnate. Stem nearly naked. Prov.

ε. *integrifolia,* Linn. L. undivided. Cantal.

379. PTEROCEPHALUS.

1. **palæstinus.** Silky. Outer Cal. with a membranous, cup-like crown; inner with 8–10 feathers. Lower L. quite entire; others lyrato-pinnate. **a.** 4, 5. *Stony hills.* Luc. and Cal. *rare.*

β. *calabricus.* All L. undivided.

2. **plumosus.** Pubescent. Crown of outer Cal. obsolete; of inner of about twelve long feathers. Lower L. undivided, serrate; middle lyrate; upper pinnatifid. **a.** Florence.

380. SCABIOSA.

A. Corolla 5-cleft.
  i. Furrows of outer Calyx not continued to the base.
    a. Setæ of inner Calyx pectinato-ciliate. Sp. 1.
    b. Setæ not ciliate.
      * Stem shrubby at base. Sp. 2–5.
      ** Root annual or biennial. Sp. 6–11.
  ii. Outer Calyx furrowed to base.
    a. Crown inflexed. Sp. 12–14.
    b. Crown spreading, undivided.
      * Stem-L. pinnatifid. Sp. 15–23.
      ** Stem-L. undivided. Sp. 24.
    c. Crown 4-lobed. Sp. 25.
B. Corolla 4-cleft. L. undivided. Sp. 26, 27.

A. *Corolla 5-cleft.*

i. *Pits of Calyx not extending to the base.*

a. *Setæ of inner Calyx pectinato-ciliate.*

1. **multiseta.** Lower L. obovate or lyrate; upper pinnatifid. Margin entire. Cor. radiate. **a.** 5–7. *Grassy.* Istria.

b. *Setæ of inner Calyx not ciliate.*

* *Stem shrubby at base.*

2. **cretica.** L. lanceolate, hoary, quite entire. Crown obliquely truncate. Inner Cal. sessile, included. Fl. radiant. **w.** 5–7. *Calc. rocks.* Cal. Sic.

3. **graminifolia.** L. linear, silky, quite entire. Inner Cal. stalked. Setæ 5, equal to crown. Fl. radiant. **p. w.** 7. 8. *Rocky.* Alps. Mountains of Carrara.

4. **limoniifolia.** Stems of the year nearly naked. L. obovato-spatulate, quite entire, tomentose beneath. Fl. nearly similar. Pits of Cal. small. Crown denticulate. Setæ of inner Cal. very exsert. **w.** 6, 7. *Calc. rocks.* Monte Cofani near Trapani.

5. **crenata.** Lower L. lineari-cuneate, entire or toothed at the top; upper pinnatifid, toothed. Setæ of inner Cal. twice crown. Fl. radiant. **w.** 6–8. *Calc. rocks.* Capri. Cal. Sic. *DC. puts this among the species whose fruit is even at the base. Bertoloni's description would have induced me to suppose the contrary.*

** *Root annual or biennial.*

6. **prolifera.** Annual. Heads nearly sessile in the forks of the stem! L. nearly entire. Setæ of Cal. hardly equalling crown. Fl. radiant. **a.** *Sea-shore.* Palermo. *Not found by Gussone.*

✓ 7. **stellata.** Heads stalked. L. incise or somewhat lyrate: terminal division very large, obovate, dentate. Inner Cal. stalked. Setæ not exsert. Fl. radiant. **a.** 5, 6. *Dry fields.* Prov.

✓ 8. **monspeliensis.** Heads stalked. Lower L. undivided, dentate; middle pinnatifid, with linear divisions; upper simple. Inner Cal. stalked. Setæ far exceeding crown. Fl. nearly alike. **a. b.** 5, 6. *Dry fields.* Prov. Sard.

✓ 9. **argentea.** "Hirsute, rough. Root-L. narrow spatulate, cuneate; upper pinnatifid. Segments linear, channeled, entire: uppermost simple. Common Cal. about equal to head; outer Cal. bearded at base. Pits large, about as long as crown. Border acutely denticulate. Setæ three times as long as border. **p.** 6–9. Italy."—Bert., *whose description I follow, as it includes the differences by which he distinguishes it from* S. ucranica. Malesherbes. *I find the common Cal. longer than Head.*

10. **eburnea.** Hirsute. Root-L. narrow spatulate; upper pinnatifid, with entire, linear segments; uppermost simple. Involucre exceeding flowers. Fr. bearded at base, downy above. Pits narrow, twice as long as crown. Setæ twice crown. **b. p.** 5, 6. *Shores.* Between Croton and Ciro in Calabria.

11. **rutæfolia.** Common Cal. of one L.! in 5 segments. L. fleshy. Lower stem-L. pinnatifid, segments linear, obtuse; uppermost simple. Crown crenate. Setæ twice crown, sessile (sometimes wanting, Bert.). **b.** 6, 7. *Dry shores.* w. It.

ii. *Calyx furrowed to the base.*

a. *Teeth of crown incurved. Furrows at base of calyx not strongly marked.*

12. **ambigua.** Root-L. obovate, crenate. Lower stem-L. lyrate, segments elongated; upper quite entire, lineari-spatulate. Branches of Pan. very spreading. Heads on long stalks. **a. b.** 7. *Rocky.* s. Fr. It. *occ.*

13. **atropurpurea.** Root-L. lanceolato-obovate. Lower stem-L. lyrate; upper pinnatipartite, or with a few large teeth. Branches of Pan. erecto-patent. **a. b.** 7, 8. *Dry hills of coast.* Cal. Sic.

✓ 14. **maritima.** All L. pinnatifid. Divisions toothed or subdivided. Branches of Pan. nearly erect. **a. b.** 6, 7. *Dry coasts.* s. Fr. Italy. *Bert. unites these three.*

b. *Crown spreading, undivided. Calyx strongly furrowed to the base.*

In this division I have endeavoured to amalgamate the descriptions of Koch and Bertoloni, but the plants vary so much in their foliage, their involucres, and the proportional length of the setæ of the inner calyx, that I have little confidence in the species. *Pauciseta,* with some of the setæ deficient, *lucida,* with large black setæ, each with an evident margin, and *suaveolens,* in which they are always short, seem the most distinct from *S. columbaria.*

* *Stem-L. pinnatifid.*

✓ 15. **ochroleuca.** Crown half as long as tube, one-third as long as setæ, *brown.* Root-L. lyrato-pinnatifid. Stem-L. pinnatipartite. Divisions flat, linear (all acuminate, Bert.). Head of Fr. ovate, *according to Koch, but I do not find it so.* **p. b.** 7, 8. *Hills.* G. and s. Fr. *occ.*

✓ 16. **Columbaria.** Crown half as long as tube, half as long as setæ. Root-L. crenate, obtuse. Stem-L. pinnatipartite. Divisions flat, nearly entire. Cor. radiant. (Head of Fr. globose, Koch.) **b. p.** 6–9. *Dry grassy.*

✓ 17. **pyrenaica.** Crown equal to one-third of tube, one-fourth of setæ, cinereo-tomentose. Root-L. crenate. Stem-L. bipinnatifid. Divisions linear, quite entire. Fl. radiant. **p.** 7, 8. *Stony hills.* s. Eur. *According to Koch,* S. pyrenaica *of Bert. is not that of DC.*

18. **holosericea.** Velvety. Crown equal to one-third of tube, half of setæ. Root-L. crenate. Stem-L. pinnatifid. Divisions ovato-lanceolate or lanceolate, acute. Fl. radiant. **p.** 7, 8. *Mountains* of Carrara. Pyr. Cal.

✓ 19. **lucida.** Crown equal to one-third of tube, one-fifth of setæ (which are broad at the base and furnished with a midrib, Koch). L. shining. Root-L. crenate. Stem-L. pinnatipartite, with linear, acute divisions. **p.** 8. *Grassy hills.* Alps.

20. **hladnickiana.** "Crown equal to one-third or one-fourth of setæ. Root-L. crenate.

Stem-L. lyrate: terminal division very large, ovate, acute, serrate. Uppermost L. pinnatifid: divisions lanceolate, inciso-serrate; the terminal confluent. **p.** 8, 9. *Hills.* Carniola. Istria."—Koch.

21. **pauciseta.** Crown equal to one-third of tube and of setæ. Setæ 1–3, on a ring. Root-L. coarsely dentate, lyrato-pinnatifid, hirsute. Stem-L. pinnatipartite. Divisions narrow. Fl. radiant. Head of Fr. globose. **p.** 6, 7. *Fields.* s. Fr. It. *This is the* Gramuntia *of some authors,—not of Linn., which has a quadrifid corolla; it is also the* uniseta *of Savi.*

22. **suaveolens.** Crown equal to one-fourth of tube and two-thirds of setæ. Root-L. quite entire. Stem-L. pinnatipartite, with thick, linear, quite entire lobes. Fl. radiant. Head of Fr. somewhat ovate. **p.** 7–9. *Hills, occ.* Fr. Ger.

23. **vestina.** "L. of barren tufts spatulato-cuneiform, quite entire. Stem-L. pinnatipartite: all the segments linear and quite entire. Crown of outer Cal. undivided, crenate. Setæ four times as long as crown. **p.** 7, 8. *Woods.* s. Tyrol."—Koch.

** *L. undivided.*

24. **dichotoma.** Crown, including setæ, equal to half tube. L. coarsely serrate: upper lanceolate. Heads nearly sessile in the forks of the stem: the terminal stalked. Fl. alike. **a.** 5, 6. *Clayey fields.* Sic.

c. *Crown divided to middle into four acuminate lobes.*

25. **silenifolia.** (Shrubby, Bert.) Lower L. and those of barren shoots obovato-cuneate, quite entire (with a single nerve and no veins, Bert.); upper pinnatifid. Segments linear, quite entire; the terminal one very large. Setæ but little exceeding crown. **p.** (or **w.**) 7–9. *Rocky.* Gottsche in Carniola. Abr. Umbria.

B. *Corolla 4-cleft. L. simple. Flowers alike.*

26. **Succisa.** Tube 4-edged. Crown and setæ very short. Stem-L. connate, lanceolate, nearly entire. **p.** 8, 9. *Grassy.*

27. **australis.** Tube bottle-shaped. Crown nearly, Teeth entirely wanting. Lower L. somewhat auricled. Stem creeping at the base? Root not præmorse. **p.** 8, 9. s. e. G.

LVI. COMPOSITÆ.

Flowers in a head, having in general the appearance of a single flower (the compound flower of Linnæus), and surrounded by an Involucrum, or common calyx. Separate flowers or florets superior. Calyx 0, or forming a crest to the seed. Corolla of one petal. Filaments inserted in the tube. Anthers united. Fruit a dry seed without albumen. The Tribes are explained in the analysis of the Genera in the Linnæan class *Syngenesia.*

Sub-order I. LIGULATÆ.

Tribe I. *CATANANCHEÆ.*

381. CATANANCHE.

1. **cærulea.** L. villous, linear, sometimes pinnatifid at base. Phyllaries ovate; the midrib produced in a point. *Fl. blue.* **p.** 6–8. *Stony hills.* s. Fr. It.

2. **lutea.** L. villous, lineari-lanceolate, 3-nerved. Outer Phyllaries ovate, acute; inner longer, acuminate. *Fl. yellow.* **a.** 5–7. *Dry hills.* Briglio in Pdm. *Common in* Sicily.

Tribe II. *SCOLYMEÆ.*

382. SCOLYMUS.

1. **maculatus.** Crest a crenate margin. Stem completely winged by the decurrent L. Fl. solitary, somewhat corymbose. **a.** 7, 8. *Dry borders.* s. Fr. It.

2. **hispanicus.** Crest of 2 principal teeth. Stem interruptedly winged. Fl. each with 2 bracts, disposed in a leafy spike. **b.** 7, 8. *Dry.* s. Europe.

3. **grandiflorus.** Crest of 2 principal teeth. Stem winged, somewhat villous, as well as L. Fl. solitary, generally terminal. Bracts 2–4. **p.** 5, 6. *Dry.* Rousillon. Collioure. Port Vendre.

Tribe III. *LAPSANEÆ.*

383. LAPSANA.

1. **communis.** L. ovate, stalked, dentate.

Root-L. lyrate. Cal. quite smooth, about as long as floret. **a.** 6, 7. *Cult. and uncult.*

384. RHAGADIOLUS.

1. **stellatus.** Cal. very small. Outer Seeds spreading in a star. *All seeds hairless.*

β. edulis. Lower L. lyrate. Cal. smooth. Inner Seeds hairy. **a.** 5, 6. *Cult.* Coasts of Mdt.

385. ARNOSERIS.

1. **pusilla.** Stalks leafless, swelling and hollow at top. L. obovate, dentate. **a.** 5, 6. *Gravel.*

386. APOSERIS.

1. **fœtida.** L. runcinato-pinnatipartite. Segments somewhat triangular; the lower smaller. Scape naked, one-flowered. **p.** 6. *Meadows.* s. Europe.

Tribe IV. *HYOSERIDEÆ.*

387. HEDYPNOIS.

1. **cretica.** Branched, diffuse, leafy. Hairs simple or slightly forked at top. L. oblong, dentate: lower attenuate; upper amplexicaul, somewhat cordate. Stalks thickened and hollow below the flower. Seeds terete, striate.

β. tubæformis, Ten. L. and Fl.-stalks subradical. **a.** 5, 6. *Coasts* of Mdt. Naples. Sic.

According to DC. we are to include under this species *Hyoseris Hedypnois* and *rhagadioloides* of Linn., together with *Hedypnois monspeliensis, mauritanica, furfuracea, crepidiformis,* and *globulifera* of various authors. Koch notices none of these names, but observes that all the species of *Hedypnois* become *H. cretica* in the Garden at Erlangen.

2. **coronopifolia.** Stem diffuse, smooth. L. oblongo-spatulate, obtuse, deeply toothed, hispid with tripartite hairs. Phyllaries somewhat hispid. Fl.-stalks thickened. *Dry hills and sandy shores.* K. Nap.

3. **polymorpha.** Branched, diffuse. L. dentate, attenuate, sessile. Fl.-stalks cylindrical. **a.** 5, 6. *Cult.* Coasts of Mdt.

4. **pendula.** Stem erect, panicled, hairless. L. oblong, dentate, somewhat hispid, ciliate: lower obovate, attenuate into a stalk. Fl.-stalks thickened upwards. Fl. nodding before flowering. **a.** Rous.

388. HYOSERIS.

1. **scabra.** Scapes thickened upward. Phyll. 10, smooth, erect after flowering. Fl. all fertile. Seeds of the disc subulate. L. runcinato-pinnatipartite. Segments triangular, dentate at top. **a.** 5, 6. *Cult.* Coasts of Mdt.

2. **radiata.** Scape terete. Phyll. spreading after flowering. Intermediate Seeds obcompressed: innermost unproductive, terete; outer involved in the phyllaries. Root-L. runcinato-pinnatipartite. Lts. with a few sharp teeth. **p.** 5, 6. *Fields and barren.* Coasts of Mdt. *Not in Koch.*

3. **lucida.** Scape hardly thickened upward. Phyll. erect after flowering, with 5 outer scales. All the seeds obcompressed and winged. **p.** 11–5. *Stony. Var. of* radiata? Sic.

389. CICHORIUM.

1. **Intybus.** Flts. numerous. Fl. 2 or 3 together, nearly sessile. Lower L. runcinate; upper lanceolate, on a broad, somewhat amplexicaul base.

β. divaricatum. One or two of the Fl. stalked. **p.** 7, 8. *Borders. β.* Toulon.

2. **glabratum.** Flts. numerous. Fl. in pairs: one sessile, and one on a long stalk. Root-L. hairless except on the nerve. Stem-L. very small. Outer Phyll. ovate, acute, somewhat ciliate, half as long as inner. **p.** 5, 6. *Hill pastures.* Sic. *Perhaps a var. of* C. Endivia.

3. **spinosum.** Flts. 6. Fl. in twos or threes, axillary, sessile; others solitary, terminal. Stem dichotomous. Branches at last pungent. **p.** 4, 5. *Dry stony shores.* Sic.

390. TOLPIS.

A. *Outer seeds crowned with short chaff; inner with also 2–4 long shafts.*

1. **barbata.** Stem branched, leafy. L. lanceolate, dentate. Outer Phyll. exceeding the inner. **a.** 6, 7. *Fields and barren.* s. Eur.

2. **umbellata.** Stem branched, nearly naked. L. oblongo-linear, dentate: the uppermost entire. Outer Phyll. not exceeding the inner. **a. b.** 6, 7. *Fields and dry.* s. Fr. It.

B. *All the seeds crowned with unequal shafts.*

3. **grandiflora.** Stem nearly naked. Root-L. lanceolate, dentate, hairy, villous at the base. Phyll. squarrose, mealy: outer short. Shafts

of Crest 4–10. **b.** 5, 6. *Pastures and borders.* K. Naples. Sic.

4. **altissima.** Stem branched. L. lineari-lanceolate, dentate: uppermost entire. Stalks and Phyll. mealy. Shafts of Crest 6–10. **a. b.** 6, 7. *Olive-grounds and sandy.* Fréjus. Toulon. Isl. of Hyères. Lig. Cors.

β. *sexaristata.* Bracts and outer Phyll. very short. Shafts 4–6.

5. **quadriaristata.** Root-L. oblongo-lanceolate, dentate or pinnatifid. Stem-L. linear, nearly entire. Outer Phyll. erect, as long as inner. Shafts of Crest rarely more than 4. **p.** 5, 6. *Barren hills.* Sic.—Guss.

Tribe V. *HYPOCHÆRIDEÆ.*

391. HYPOCHÆRIS.

1. **glabra.** Outer Phyll. obtuse; inner acuminate, equalling florets. Stem branched. L. runcinate or sinuato-dentate. Root simple. **a.** 6–8. *Dry banks.*

α. Outer Seeds truncate; inner beaked.

β. *arachnoidea.* No Beaks to seeds.

γ. *Balbisii.* All Seeds beaked.

2. **neapolitana.** Outer Phyll. obtuse; inner acuminate, equalling florets. Stem branched. L. sinuato-dentate, ciliate. Root fascicled. **p.** ? 7, 8. *Sandy thickets.* Nap. Mtp. *Common in* Sicily.

3. **radicata.** All Phyll. acuminate, falling short of florets. L. runcinate. Stem branched, scaly at top. **b.** 5–7. *Pastures and waste. Not in Sicily.*

392. ACHYROPHORUS.

1. **pinnatifidus.** Root-L. pinnatifid. Lobes lineari-lanceolate, cuspidate, nearly entire. Stem nearly naked. *Mountain meadows.* K. Nap. Cors.

2. **maculatus.** Root-L. ovali-oblong, undivided. Stem with 1 L. and 1 or 2 flowers. Bracts few, opposite, spreading. Phyll. with rigid hairs and an entire margin. **p.** 6, 7. *Rough pastures, occ.*

3. **helveticus.** Root-L. oblongo-lanceolate, dentate, hirsute. Stem with 1 or 2 L. and 1 flower. Phyll. lacerato-fimbriate. **p.** 6, 7. *Mountain meadows.* Alps. G.

393. METABASIS.

1. **ætnensis.** Stem branched. Root-L. obovate, undivided, hairy. Stem-L. few, small, oblong or linear, quite entire. Phyll. hairy on the back. **a.** 6, 7. *Cult. and uncult.* Coasts of Mdt.

2. **cretensis.** Stem sparingly branched. Root-L. runcinate, hairy on both sides. Stem-L. few, linear, quite entire. Phyll. bristly. **p.** 5, 6. *Borders.* Palermo. Sard.

394. SERIOLA.

1. **lævigata.** Smooth. Stem somewhat branched. Root-L. obovato-oblong, dentate, somewhat acute, attenuate. External Phyll. small, linear.

β. *glauca.* Phyll. with white rigid bristles on the back.

γ. *albicans.* Phyll. with black hairs on the back. **p.** 4–6. *Rocks.* Sic.

2. **depressa.** Hispid. L. obovate, dentate or dentato-runcinate. Stem branched, depressed. Phyll. with pungent bristles. s. Cors. Sardinia.

395. ROBERTIA.

1. **taraxacoides.** Smooth. Root-L. runcinato-pinnatifid. Lobes entire. Scapes several, naked, one-flowered. **p.** 7, 8. *Rocky.* Cors. Sard. Ætna.

Tribe VI. *TRAGOPOGONEÆ.*

396. UROSPERMUM.

1. **Dalechampii.** L. runcinato-dentate. Phyll. velvety. **b.** 6, 7. *Fields and vineyards.* s. Fr. It.

2. **picroides.** L. runcinate, dentate: those on the stem auriculato-sagittate. Phyll. bristly. **a.** 6, 7. *Fields, vineyards, uncult.* s. Fr. It.

β. *asperum.* Usually one-flowered. Upper L. nearly entire. Mtp.

397. GEROPOGON.

1. **glaber.** Stem nearly simple. L. long, semiamplexicaul. *Fl. purple.* **a.** 6, 7. *Fields.* Nice. Sard. Sic.

398. TRAGOPOGON.

A. *Stalk enlarged and hollow at top.*

1. **porrifolius.** Smooth. L. lineari-subulate on an expanded base. Phyll. about 8, nearly twice as long as florets, which are rounded at the ends. Fl. flat, *purple.* **a.** 6, 7. *Meadows, occasionally.*

2. **Cupani.** "Smooth. (Axils of L. woolly, Guss.) L. expanded at the base in a broad, concave sheath, linear, acuminate, quite entire. Phyll. about 8, exceeding purpurascent florets. **a.** or **b.**? 4. Monte Capoto near Palermo." —DC.

✓ 3. **major.** Smooth. L. lineari-subulate on an expanded base. Phyll. 12–15, exceeding the florets, which are rounded at top. Fl. concave, *yellow.* **b.** 5, 6. *Fields and vineyards.*

4. **eriospermus.** Smooth. L. striate, broadly linear. Phyll. about 10, about as long as florets, which are denticulate at top. Beak of Seeds woolly at top (this is the case with most of the species, J. W.). **b.** *Moist pastures.* Agnano and Tavoliere, Nap.

5. **hirsutus.** Somewhat hirsute. L. lanceolato-linear, acuminate. Phyll. 12, falling short of florets. Seeds spinulose at top, about as long as beak, *yellow.* **b.** *Grassy hills.* Prov. Lang.

B. *Stalk nearly cylindrical.*

✓ 6. **crocifolius.** Smooth. L. lineari-subulate. Phyll. 5–8, exceeding florets. Seeds with acute angles, squamoso-muricate from the base. *Flts. dark purple, with yellow tips.* **b.** 7, 8. *Mountain pastures.* Great St. Bernard.

β. nebrodensis. Phyll. hardly exceeding florets. Sic.

✓ 7. **minor.** L. flaccid, lineari-subulate, on an expanded base. Phyll. about 8, twice as long as florets, *yellow.* **b.** 5–7. *Meadows.*

8. **angustifolius.** Smooth. L. linear, very narrow, hardly or not at all expanded at base. Phyll. about 8, exceeding florets. **a.** Nice. Apenn.

9. **floccosus.** *Cottony.* L. lineari-subulate, channeled, quite entire. Phyll. falling short of florets. Marginal Seeds smooth at base, squamelloso-muricate almost to the top of the very short beak. **b.** 6, 7. *Grassy.* Pomerania.

✓ 10. **pratensis.** Smooth. L. somewhat keeled and undulate, twisted at top. Phyll. 8, equalling the truncate, *yellow* florets. Marginal Seeds rough with tubercles, as long as filiform beak. **b.** 5, 6. *Meadows.*

✓ 11. **orientalis.** Smooth. L. undulate and twisted at top. Phyll. 8, transversely impressed above the base, shorter than florets. Marginal Seeds squamoso-muricate, about twice as long as filiform beak. **b.** 5–7. *Fertile meadows.* Rheinthal. Silesia. Sax.

Tribe VII. *LEONTODONTEÆ.*

399. LEONTODON.

I have preferred Koch's descriptions and arrangements to those of De Candolle. Both rest on the existence and nature of an outer row of shafts, which are not feathered; but the distinction is not very clear, as these outer shafts do not always form a complete row. *Incanus, Berinii, crispus,* and *saxatilis,* are said by DC. to have such an outer row; but Koch places them in the division where there is no such row.

A. *Crest with some short, rough, not feathered outer Shafts.*

i. *Root præmorse. Crest white. Scape* 1-*flowered.*

1. **Taraxaci.** Scape with 1 or 2 scales, thickened upwards, covered at top, as well as the calyx, with black hairs. **p.** 7, 8. *Very high pastures.* Alps.

ii. *Root præmorse, with stout Fibres. Crest dirty.*

2. **pyrenaicus.** Scape scaly, thickened upwards. Fl.-buds nodding. L. repando-denticulate, or toothed. Hairs simple. Inner Shafts on a linear, serrulate base. **p.** 7, 8. *Mountain pastures.*

β. croceus, Hænke. Fl. saffron.

γ. croceus, Willd. Inner L. pinnatifid.

3. **hastilis.** Scape naked or with 1 or 2 scales, thickened upwards. L. oblongo-lanceolate, attenuate, toothed, sinuate or pinnatifid. Hairs forked. Inner Shafts on a broader serrulate base. **p.** 6–9. *Meadows and pastures.*

β. hispidus. The most common form.

γ. siculus. L. densely hairy. Scape and Cal. nearly smooth. Sic.

δ. hyoseridifolius. L. divided to midrib. Segments linear.

ϵ. dubius. L. obovato-lanceolate. Scape without scales.

4. **lucidus.** "Quite hairless. Scape somewhat scaly. L. oblongo-cuneate, lyrato-pinnatifid. Phyll. lanceolate. Margin somewhat scariose. Seeds muricate. **p.** 7. Sarzana. Euganean Hills."—DC.

iii. *Root vertical, simple.*

5. **tenuiflorus.** Scape naked or with 1–2 scales, thickened under the flowers. Fl.-buds nodding. L. lineari-lanceolate, repando-denticulate. Hairs forked. **p.** 6. Hill of St. Salvador at Lugano. Canton of Tessin.

B. *All the Shafts feathered.*

i. *Root vertical, nearly simple.*

6. **Berinii.** "Scape 1–3-flowered, with a L. at each branch, somewhat scaly, thickened at flowers. Fl.-buds nodding. L. oblongo-lanceolate attenuate, rough, with a mealy pubescence. Hairs 3–4-cleft. Inner Shafts with a broader, serrulate base. **p.** 7, 8. *Gravel* of the Isonzo."—Koch.

7. **incanus.** Scape 1-flowered, thickened under flowers, naked, or with 1–2 acuminate scales. L. oblongo-lanceolate, somewhat denticulate, hoary on both sides with a short stellate pubescence. Inner Shafts with a broader serrulate base. (Recept. downy, Gaud.) **p.** 7. *Mountain meadows and rocky hills.* e. Alps. France.

8. **crispus.** Scape 1-flowered, naked or with 1–2 scales, hardly thickened upwards. Fl.-buds nodding. L. pinnatipartite, rough with rigid, forked hairs. Seeds with a short beak, regularly tubercled, shorter than crest. Outer Shafts shorter; all feathered from base. **p.** 7, 8. *Open rocky.* Zermatten. On the Flüelen, Canton of Tessin. w. Alps.

9. **saxatilis.** Scape 1-flowered, hardly scaly, thickened at the top. Fl.-buds nodding. L. lanceolate, attenuate, sinuate or pinnatifido-dentate. Hairs 3-cleft, rigid. Phyll. hairy on the back. Tube of Fl. equal to blade. Beak of Seeds muricate, twice as long as crest. All the Shafts feathered from the base. **p.** 6, 7. *Open calc. mountains.* adr. G. Montp. Corsica. Capri.

10. **asper.** "Hoary with rigid, 3-pronged hairs. Scape usually 1-flowered. L. sinuato-dentate or runcinato-pinnatifid. Phyll. with simple hairs. Seeds hispid. **p.** 7, 8. *Calc. hills.* Westph. Sw."—Rchb. Pyr. Sic.?

11. **biscutellifolius.** "Scape 1–2-flowered, striate, somewhat strigillose. L. oblong, attenuate, pinnatifid. Divisions very narrow, toothed, acute. Hairs simple and forked. All the Phyll. linear, acuminate, ciliate and hairy on the back; outer recurved at top. Seeds finely muricate. **p.** *Dry pastures.* Apenn. of Rome and Naples."—DC. *I do not know whether the root is præmorse.*

ii. *Root præmorse.*

12. **Villarsii.** Root scaly. Scape 1-flowered, nearly hairless. L. lineari-spatulate, pinnatipartite. Segments nearly triangular. Hairs simple, rigid. Phyll. acuminate. Seeds nearly smooth. **p.** 6, 7. *Open stony.* s. Fr. Piedmont.

13. **Rosani.** "Scape naked, 1-flowered, hispid near the flowers. L. runcinato-pinnatifid, hispid with glochidiate hairs. Lobes very remote, terminal, hastato-triangular. Rosano, Ischia. *Differs from* L. Villarsii *by its glochidiate hairs.*"—Ten.; *but DC. says the hairs are simple.*

14. **autumnalis.** L. pinnatifido-dentate. Scapes scaly at top, erect before flowering, branched. Seeds with rugulose stripes. Crest dirty. **p.** 7–9. *Meadows, &c.*

β. *pratensis* (*Apargia Taraxaci* of Sm., if one-flowered). Cal. and Stalks densely covered with dark hairs.

400. MILLINA.

1. **leontodontoides.** Scape simple. L. elliptical, runcinato-dentate at base. Beak about as long as seed. Shafts of the Crest not dilated at the base. **p.** 5, 6. *High woods and pastures.* Monte Gargano. Madonie. Ætna.

401. THRINCIA.

A. *Inner Seeds hardly beaked; outer not at all so.*

1. **hirta.** Root somewhat præmorse, with strong fibres. L. lanceolate, sinuato-dentate. Hairs simple or slightly forked. Accessory Scales 10–12. **p.** 7, 8. *Dry borders.*

2. **hispida.** Root fusiform, without strong fibres. Hairs 2–3-forked. **a.** 6, 7. *Stony or sandy. occ.*

B. *All Seeds beaked; inner most so.*

3. **tuberosa.** Root grumoso-fasciculate. L. runcinate. Hairs forked. **p.** 5, 6. *Meadows on Coasts* of Mdt.

402. KALBFUSSIA.

1. **Mulleri.** L. nearly entire or somewhat incise. Divisions obtuse. Phyll. with a furfuraceo-pubescent margin. Seeds of centre

twice as long as those of circumference. **a.** 4, 5. *Sandy pastures.* Sard. Catania.

Tribe VIII. *PICRIDEÆ.*

403. PICRIS.

✓ 1. **hieracioides.** Hispid with bristles and hairs forked at top. L. oblongo-lanceolate, sinuato-dentate: the upper somewhat amplexicaul. Phyll. bristly on the back, smoothened on the margin. **p.** 7, 8. *Uncult.*

✓ *β. crepoides,* Sauter. Upper L. with long acumen. Sty. Vosges.

γ. ruderalis, Besser. Outer Phyll. much broader. Boh.

δ. paleacea, Vest. Fl. subumbellate. Sty.

ε. scaberrima, Guss. Cal. mealy. Calabria.

ζ. spinulosa, Guss. Keel of Phyll. spinous. Sic.

✓ 2. **hispidissima.** Stem corymbose. L. lanceolate, sinuato-dentate. Stem-L. cordate at base and somewhat amplexicaul: uppermost entire. Outer Phyll. setoso-ciliate, spreading. Seeds transversely wrinkled. **b.** 6, 7. *Sandy shores.* I. of Veglia.

3. **pauciflora.** Somewhat glaucous. Stem slightly branched. L. lanceolate, dentate: lower attenuate; upper aurito-sagittate. Fl.-stalks long, naked. Outer Phyll. few, lineari-setaceous, short, spreading; inner concave, torulose. **a.** 7, 8. *Open uncult.* s. Fr. It.

✓ 4. **sprengeriana.** "Green. Stem much branched. L. lanceolate, dentate: lower attenuate; upper aurito-sagittate, sessile. Fl.-stalks terete. Outer Phyll. short, lineari-setaceous, spreading; inner concave, torulose. **a.** *Rough.* Narb. Nice."—DC. *Seems to differ from Sp.* 3 *only in colour and in being more branched.*

5. **integrifolia.** "Stem erect, branched. L. entire; lower obovato-oblong, attenuate into stalk. Stem-L. cordate at base, semi-amplexicaul, acuminate. Fl.-stalks spreading, without bracts. Phyll. very hispid: the outer spreading. **a.** Eur."—DC.

404. HELMINTHIA.

✓ 1. **echioides.** Erect, hispid. Outer Phyll. cordate. **a.** 6, 7. *Fields and uncult.*

2. **spinosa.** Erect, hispid, corymbose. Outer Phyll. 3, lanceolate, spreading, shorter than inner. **a.** 7. Pyr. *Not found lately.*

3. **humifusa.** "Stem erect or prostrate, nearly smooth. L. strigose. Root- and lower L. oblongo-obovate, entire or sinuato-pinnatifid; upper oblongo-lanceolate, entire, amplexicaul. Outer Phyll. ovate, ciliato-spinose, half as long as inner. Seeds smooth. **p.** 4–8. *Dry fields.* Sic."—Guss.

4. **aculeata.** "Rough with forked bristles and prickles. L. oblongo-lanceolate, unequal, repando-dentate. Stem-L. few, amplexicaul. Fl. in a corymb. Stalks thickened upwards. Phyll. linear on an ovate base: outer lanceolate, finely acuminate. Seeds transversely muricate at top. Crest white, on a long stalk. **p.** 5, 6. *Calc. hills.* Sic."—Guss.

Tribe IX. *SCORZONEREÆ.*

405. PODOSPERMUM.

A. *L. divided.*

1. **calcitrapifolium.** L. pinnatifid: segments elliptico-lanceolate, obtuse. (L. pinnate: segments oval or oblong, DC.) Phyll. pointless. No barren shoots. **b.** or **p.** 6. *Calc. hills.* Alsace.

β. decumbens. Phyll. not bearded at top. Sicily.

2. **Tenorii.** "Stem erect, branched. L. pinnatipartite. Segments lineari-lanceolate, quite entire. Phyll. nearly smooth, but with an internal beard at the tip. **b. p.** *Clayey hills.* Luc. Cal. Flowers twice as large as in *P. jacquinianum,* and the Calyx not angular."—DC.

3. **jacquinianum.** Root many-headed, producing, besides the stem, barren tufts of L. Segments of L. few, linear, acuminate. Marginal Flts. twice as long as acuminate phyllaries. **p.** 6–8. *Waste.* lower Aust. Mor. Luc. Cal. Sic. ✓

4. **intermedium.** "Smooth, erect, branched. L. pinnate. Segments oblongo-linear, acute, entire; uppermost longer, confluent with the next. Phyll. pointless. **p.** *Meadows.* Alby. Briançon. Agen. Tende. Sic."—DC.

5. **laciniatum.** Root simple. No barren tufts of L. Stem erect, branched. Branches in the living plant terete. L. pinnatifid. Divisions linear, acuminate, entire. Phyll. somewhat uncinate at top, nearly as long as marginal florets. **b.** 5–7. *Fields, meadows, &c* s. and m. Eur. ✓

β. *muricatum.* Stem muricate. Some of L. undivided. s. Fr.

γ. *subulatum.* L. lineari-subulate. s. Fr.

B. *All L. linear, quite entire.*

6. **callosum.** Stems numerous, naked at top, 1-flowered. L. flat, nerved, callous at the tip. Phyll. acuminate, skinny on margin: the outer somewhat woolly at the back; the inner smooth. Seeds smooth. **p.** *Dry calc. pastures.* Arcidano and Oliastra in Sard.

7. **Columnæ.** Stems numerous, naked at top, 1-flowered. L. linear, carinate, somewhat woolly. Phyll. acuminate, smooth. Seeds muricate, attenuate. **p.** 5, 6. *Dry calc. hills.* Cal. Sic. Sard. *According to Guss., this has not the seeds of* Podospermum.

406. SCORZONERA.

A. *Seeds hairless.*

i. *Flowers purple.*

1. **deliciosa.** "Root tuberous, oblong. Stem simple, or branched quite at the base. Fl. solitary. L. flat, linear, acuminate, mealy and somewhat cottony at the base. Phyll. quite smooth: the external elliptico-lanceolate, somewhat acute, adpressed. **p.** *Mountain pastures.* Near Palermo. *Certainly different from* S. purpurea."—DC.

2. **purpurea.** Root cylindrico-fusiform, with a stringy coma. Stem 2–5-flowered. L. channeled, somewhat 3-edged, lineari-subulate. Cal. cylindrical. Outer Phyll. ovato-lanceolate, not ciliate. Seeds marked with smooth stripes. **p.** 5, 6. *Grassy calc. hills.* G. *occ.*

3. **rosea.** Root cylindrico-fusiform, with a stringy coma. Stem usually 1-flowered. Root-L. flat, lineari-lanceolate. Stem-L. few, linear, keeled. Cal. cylindrical, webbed at the base. Outer Phyll. ovato-lanceolate. Stripes of Seeds roughened with small teeth. **p.** 7. *Mountain meadows.* Carn. Mts. of Trent. Apen.

4. **trachysperma.** "Smooth. Stem simple or merely branched at base. Fl. solitary. L. linear, acuminate, striate, quite entire. Cal. cylindrical. Phyll. tiled, acute. Seeds tuberculato-serrulate. **p.** *Meadows.* Calabria." —DC. *Seems to be a var. of* S. rosea.

ii. *Flowers yellow.*

5. **angustifolia.** "Root cylindrical, naked at crown. Stem 1-flowered, thickened upwards, covered with linear scales. Lower L. sessile, linear, somewhat 3-nerved. Cal. ovali-oblong. Phyll. long lanceolate. Seeds striate, smooth. **p.** *Sandy hills.* s. and e. Fr. Sw. n. Italy." —DC.

6. **aristata.** Root cylindrical, nearly naked at crown. Stem naked, 1-flowered. L. lineari-lanceolate, very long, 3–5-nerved, quite entire, webby at the base. Cal. ovate. External Phyll. lineari-subulate on an ovato-lanceolate base, often as long as inner. Seeds transversely plicato-tuberculate. **p.** 7. *Mountain meadows.* Pyr. Carinthia. Carn. ✓

7. **tenuifolia.** "Crown naked. Root-L. narrow linear, quite entire. Stem with very few L. and 1 flower. Cal. ovato-oblong. External Phyll. acuminate; inner acute. Seeds muricate on angles. **p.** *Mountain meadows.* Monte Bego and Bussolino in Pdm."—DC.

8. **hispanica.** Root cylindrical. Coma scaly. Stem branched, leafy, somewhat woolly. Root-L. oblong or lanceolate, acuminate, undulate or somewhat denticulate. Phyll. all acute. Marginal Seeds muriculate. **p.** 6, 7. (*Rich meadows.* Ger.—KOCH.) ✓

β. *glastifolia.* L. ovali-lanceolate, amplexicaul, flat. ✓

γ. *montana.* Stalk and L. woolly.

9. **humilis.** Root with a scaly (fibrous, DC.) coma. Root-L. oblongo-lanceolate or linear. Stem woolly, with 2–3 linear L., and 1–3 flowers. Phyll. half as long as florets, ovato-lanceolate, acuminate, obtuse. Seeds with smooth stripes. **p.** 5, 6. *Moist meadows.* ✓

β. *plantaginea.* L. elliptico-lanceolate, 5-nerved. ✓

γ. *macrorhiza.* Root large. Crown naked.

10. **austriaca.** Root with a stringy coma. Root-L. oblongo-lanceolate or linear. Stem-L. 2 or 3, small. Stem 1-flowered. Phyll. acuminate, but with a broad and blunt extremity. Seeds smooth. **p.** 4, 5. *Rocky hills.* s. e. Ger. s. Sw. ✓

11. **parviflora.** Root many-headed. Coma 0, or of a few scales. Stem 1–4-flowered. Root-L. lineari-lanceolate, acute. Stem-L. few, linear. Outer Phyll. equalling florets, ovate; inner lanceolate. Seeds with smooth stripes. **p.** 5–7. *Moist meadows.* s. c. G. Shores of Mdt. Fr.

B. *Seeds villous.*

12. **hirsuta.** Stem 1-flowered: upper part nearly naked. L. linear, keeled, somewhat hairy. Phyll. acuminate, hairless, with

a somewhat scariose margin. **p.** *Dry hills.* mdt. Fr. Pdm. K. Nap. Sic.

407. GALASIA.

✓ 1. **villosa.** Villous. Stem somewhat branched. L. linear, keeled. Phyll. finely acuminate: the inner smooth. Seeds smooth. Crest of the inner Seeds woolly at base. **b. p.** *Warm rocky.* Trieste. Fiume.

Tribe X. *HIERACEÆ.*

408. ANDRYALA.

A. *Receptacle entirely without chaff.*

✓ 1. **ragusina.** Velvety, hoary or reddish, much branched. Lower L. lyrato-pinnatifid; middle acutely dentate; upper quite entire. Fl. on long stalks, in a lax panicle. Phyll. lineari-subulate, convex on the back. **p.**

✓ β. *lyrata.* Middle L. obtusely toothed. *Sandy river-beds.* Narbonne. Rousillon.

✓ γ. *incana.* Lower L. dentate; nearly all the rest quite entire, very acute. Fl. small. Gistain in the Pyr.

✓ 2. **tenuifolia.** Hoary, velvety. L. lanceolate, somewhat dentate, acuminate. Fl. racemoso-corymbose. Phyll. bearing hairs black at top, as well as the soft down, nearly as long as florets. **a.** 5, 6. *Sandy shores.* Pal. and between Agosta and Syracuse.

3. **cossyrensis.** "Green, and finely tomentose. Stem much branched from the base. Root-L. in a rosette. Lower Stem-L. lyrato-pinnatifid; upper linear, acuminate, entire. Fl. somewhat corymbose. Cal. and Stalks finely tomentose, and furnished with glandular bristles. Flts. twice as long as phyllaries. **a.** 4, 5. *Volcanic hills.* Pantellaria."—Guss.

4. **dentata.** "Softly hoary. Stem erect, simple at base. Root-L. oblongo-lanceolate, dentato-sinuate, somewhat undulate. Stem-L. sessile, lanceolate. Fl. in an exact corymb. Cal. and Stalks with loose cotton and glandular bristles. Flts. twice as long as phyllaries. **a.** 5, 6. *Sandy.* Sic."—Guss.

B. *Pellucid Chaff on the margin of the receptacle.*

✓ 5. **sinuata.** Smooth below, velvety above, with a mixture of glandular hairs on calyx and stalk. Stem somewhat branched, corymbose. Lower and middle L. pinnatipartite: segments linear. Upper L. linear, undivided. **b.** 6, 7. *Hills.* s. Fr.

✓ 6. **integrifolia.** Velvety and more or less canescenti-tomentose, with a mixture of glandular hairs on calyx and stalk. Stem erect, corymbose. Lower L. oblong, entire, dentate or somewhat runcinate; upper entire, semiamplexicaul. **b.** 6, 7. *Fields and barren.* s. and m. Eur. *It varies in the shape of the L.*

β. *undulata*, Guss. No short glandular hairs on calyx and stalk. L. sinuato-dentate.

409. HIERACIUM.

It seems impossible to give an analysis of the European part of this genus, without such a reduction of the number of species as would only be justifiable in a monograph of the whole. I could have wished to follow De Candolle, as the number of species is exceedingly deficient in any local author; but the grounds on which he has formed his subdivisions are totally untenable. I have therefore taken my divisions from Koch, as in many other cases, though not here quite satisfactory, and inserted the additional species as well as I could; taking care, in all cases where I was unable to insert the species with certainty in their proper places, to give the whole phrase of the author from whom I adopted them, that my reader might have all the means of judging which I myself possessed. I am afraid at last it will be found but a crude mass; but it has not been for want of time or pains spent on the subject. The hairs of *Hieracium* are of four sorts. 1. Strong, rough hairs, more or less swelled and coloured at the base; less coloured on the leaves and lower part of the stem than on the upper, where they are frequently all dark, and where the smaller ones are sometimes tipped with a gland, and thus passing into the next form. These strong hairs often split at the summit into two or three points. They appear to be round, and therefore are not properly strigæ, which are flattened hairs approaching to the nature of scales. 2. Short, fine hairs, each tipped with a gland, and not enlarged at the base. 3. A stellate pubescence, occurring chiefly on the under side of the L. (especially among the *Pilosellæ*) and about the inflorescence. This is sometimes very fine, and loosens itself, when it is called mealy, or floccose. 4. Flexuose bristles, each joint prolonged into a point or sometimes into a hair, giving a feathered appearance to each bristle.

A. PILOSELLÆ.

A natural group, the members of which are easily recognized but not easily defined, as all the divisions with permanent root-L. contain species in which the stem might be thought scape-like. This is the only division in which we find runners. The L. in most of the species are furnished with a stellate pubescence, which does not extend to the upper surface, while the strong rough hairs are more abundant on the upper surface. The colour is greyish, and some which are described as green are rather comparatively than absolutely so.

i. *Stalks one-flowered.*

✓ 1. **Pilosella.** L. obovato-elliptic, quite entire, white with stellate pubescence beneath.

- *α.* Phyll. all lanceolate or linear, acute. Roots slender, single-headed. Runners long. **p.** 5–7. *Dry meadows and pastures.*
- ✓ *β. peleterianum*, DC., differs from *α* in having a stout Root, branching upwards, and Runners short or 0. **p.** 5, 6. *Rocky.* Rhine. Orme's Head.
- *γ. tenoreanum*, DC. Cal. covered with brown wool. *Mountain meadows.* Luc. Monte Majella.
- *δ. piloselliforme*, DC. Outer Phyll. ovate, obtuse. Alps. *Does not well bear a German winter, and is perhaps a distinct species.*—Koch.
- *ε. macranthum*, Ten. Outer Phyll. not bordered.

It appears that in this species the runners sometimes produce stalks with more than one flower, but these are very rare. The central Stalk is always one-flowered.

ii. *Stem forked. Branches erect, each bearing a solitary flower.*

2. **stoloniflorum** (*flagellare*, DC.). Stem with about 1 L. L. cano-floccose beneath. Cal. of Fr. ventricose, having nearly a globose base. **p.** 5–7. *Hill pastures.* Boh. Hamb.

✓ 3. **bifurcum** (including *brachiatum*). Stem about 1-leaved. L. somewhat coriaceous, tomentose beneath. Cal. of Fr. ovato-conical. **p.** 5–7. *Open hills.* G. *occ.* Als.

4. **furcatum** (including *sphærocephalum*). Stem naked or with 1 L. L. cano-floccose beneath: the outer obovate; inner lanceolate. Cal. of Fr. globose. **p.** 7, 8. *Very high pastures.* Alps.

- *β. alpicola.* Stem very hirsute. Cal. covered with black wool. **p.** 7, 8. Monte Moro. Monte Legnone.

iii. *Stem single, naked or with a single L. Flowers 2–5, crowded into a head.*

5. **breviscapum.** L. covered on both sides with a stellate pubescence and strong hairs: inner lanceolate; outer obovate, hairless. Runners short or 0. **p.** 7, 8. *Very high.* On the Fouly in Sw. Val d'Eynes, Pyr.

6. **angustifolium.** L. *green*, lineari-lanceolate, smooth or furnished with stellate pubescence on margin and midrib, and with scattered bristles. Runners short or 0. **p.** 7, 8. *High pastures.* Alps. Pyr. *H. Auricula*, Sm. ✓

7. **Auricula.** L. without stellate pubescence. Runners long, very rarely bearing a forked scape. **p.** 6–9. *Meadows and mountains.* ✓

iv. *Stem simple, leafy at the base. Flowers crowded.*

8. **sabinum.** Stem and L. covered with stellate pubescence and with long hairs. L. green. Fl. 20–30. **p.** 6–8. *High pastures.* Sw. s. G. ✓

9. **aurantiacum.** No stellate pubescence. Stem covered with slender hairs, and also with black hairs in the upper part. L. grass-green, obovato-lanceolate. *Fl. deep orange.* **p.** or **b.** 6, 7. *High pastures, occ.* w. Eur. ✓

- *β. luteum.* Fl. three times as large as in *H. sabinum.*
- *γ. bicolor.* Inner Flts. yellow; outer orange. Fl. 2–5.
- *δ. fuscum.* Stem nearly leafless. L. glaucous. Fl. 1–2.

10. **pratense.** Little or no stellate pubescence. Stem with a few L. at base, covered with long, slender hairs, and also with black and glandular hairs in the corymb. L. somewhat glaucous, oblongo-lanceolate. *Fl. much smaller and much more numerous than in* H. aurantiacum (40–100). **p.** 6–8. *Boggy hill meadows.* n. G. and on the Rhine. It. ✓

v. *Stem terminating in a corymb of* 20–100 *flowers.*

a. *Stem-L.* 1–3, *or wanting.*

11. **piloselloides.** Stem hairless. Corymb somewhat panicled, hairless or with only a few scattered hairs. L. narrow lanceolate, without stellate pubescence. Branches of Corymb curved upward when in fruit. **p.** 6, 7. *Rocky hills and gravel of torrents.* s. Alps. ✓

12. **præaltum.** Stem nearly or quite hairless below. Corymb with stellate and bristly ✓

hairs. Branches straight when in fruit. L. lanceolate, sometimes with a stellate pubescence beneath. **p.** 6, 7. *Dry meadows and barren hills.* m. and s. Eur.

α. *florentinum*, Willd. No barren runners. L. with strong hairs on margin and midrib.

β. *fallax*, DC. No barren runners. L. covered on upper surface with strong hairs. Stem nearly smooth.

γ. *fallax*, Willd. No barren runners. L. covered on upper face with strong hairs. Stem covered with stellate hairs.

δ. *Bauhini*, Schult. Long barren runners. L. with strong hairs on margin and midrib. *Without L. on stem, this is the* melachætum *of Tausch ; with two or three leaves, it is the* radiocaule.

ε. *fallax*, Koch. Long barren runners. Upper face of L. covered with strong hairs. Stem nearly smooth.

ζ. *piloselloides*, Wallr. As the last, except that the stem is covered with a stellate pubescence. *Glaucescens*, Bess., is also probably a var. of *præaltum*.

b. *Stem-L.* 3–6.

13. **Nestleri.** Stem with simple and stellate hairs. L. oblongo-lanceolate, with stellate pubescence on both sides, and short bristles: inner acute. Fl.-stalks fascicled. **p.** 6, 7. *Rocky hills.* e. G.

14. **cymosum.** "No runners. Scape few-leaved, bristly at base, tomentose and with glandular hairs at top. L. floccose beneath: outer obovate; inner ovato-lanceolate. Cyme regular, compound, compact: that and the calyces silky. **p.** *Open stony hills.* Fr. Sw. G."—DC., *who makes* Nestleri *a var. of this.*

c. *Stem-L. more than* 6.

15. **cymosiforme.** "No runners. Scape leafy, and, as well as the lineari-lanceolate, acute, nearly entire L., floccose and hispido-hirsute. Branches of Corymb nearly erect, many-flowered, hoary. Cal. ovate, covered with white hairs. **p.** *Rough hills.* At Weinheim, between Heidelberg and Darmstadt."—DC.

16. **echioides.** Stem densely covered with stellate pubescence and with rigid hairs. L. densely hispid with long and strong bristles on both sides, and stellate pubescence beneath: upper gradually smaller. Corymb fastigiate and covered with white down and hairs. No barren runners. **p.** 6–8. *Uncult hills.* n. and c. G.

β. *setigerum*, Tausch. Bristles spreading.

γ. *cinereum*, Tausch. Fl. fewer and much smaller.

B. Drepanoideæ.

The want of bristles on the obtuse phyllaries, and the divaricate branching of the stems, separate these from the *Pilosellæ*; besides which, excepting in *H. saxatile*, they have no stellate pubescence on the L. The first character will also go far to separate them from all the other divisions retaining their root-L. Stalks scaly near the flower, and phyllaries tiled in many series.

i. *Root creeping. Stem nearly naked.*

17. **staticifolium.** Stem 1–5-flowered. Stalks long, thickened upwards: these and the Cal. mealy. L. linear, somewhat obtuse, hairless. **p.** 6, 7. *Gravel of torrents.* Alps.

ii. *Root not creeping. Stem leafy at base.*

18. **porrifolium.** Stem 10–30-flowered, branched from base. Branches slender, usually 2-flowered. L. lineari-lanceolate, acuminate, hairless or ciliate at base. Cal. and Stalks hoary with stellate pubescence. Outer Phyll. squarrose. **p.** 7, 8. *Rocky mountains.* s. e. G.

19. **graminifolium.** "Hairless, glaucous. Stem branched, leafy. Branches long, straight, erect, scaly at top. L. linear, quite entire, naked beneath. Root-L. somewhat ciliate at base. Cal. hairy, mealy. Crest white! **p.** *Gravel of torrents.* Sw."—DC.

20. **glaucum.** Stem 50–60-flowered, hairless. Cal. and divaricate stalks with stellate pubescence, otherwise hairless. Phyll. adpressed. L. lanceolate, acuminate, hairless, or only bearded at base. **p.** 6–8. *Stony mountains.* Alps.

21. **saxatile** *of Jacq. Obs.* "L. membranous, lanceolate, dentate, floccose beneath. Root-L. ciliate at base. Cal. naked. Stalks scaly. **p.** *Calc. rocks.* Baden in Austria. Aargau."—DC. *Koch, in his last ed., joins this to* porrifolium, *from which it differs by its much broader L., covered beneath with a stellate pubescence.*

C. Villosæ.

The long hairs of the Cal. separate these from the last division. From the *Pillosellæ*, which are much more different in habit, it is more difficult to fix upon a distinguishing mark, when the plant, as is sometimes the case, offers only one or two flowers.

i. *Stem leafy.*

22. **bupleuroides.** Stem 2- or more flowered, hairless. Cal. and erect Stalks covered with stellate and simple hairs. Phyll. subacute. L. lanceolate, acuminate, smooth or only ciliate at base. Stem-L. numerous. **p.** 7, 8. *Rocky.* Alps.

23. **glabratum.** Stem 1- or more flowered, hairless. Cal. white with abundant hairs. Stalk with woolly and stellate pubescence. Phyll. finely acute. L. lanceolate, acuminate, smooth or somewhat ciliate at base. **p.** 6, 7. *Rocks and gravel of torrents.* Alps.

24. **speciosum.** Stem 2- or more flowered, hairy and with stellate pubescence above the middle and on calyx. Inner Phyll. acute; outer lax. L. lanceolate, acuminate, ciliate on margin and midrib; or hirsute on both sides and with stellate pubescence. **p.** *Mountains.* Switzerland.

25. **dentatum.** "Stem 1- or more flowered, villous and with stellate pubescence. Phyll. (adpressed, HOPPE) finely acuminate. L. lanceolate, acuminate, soft, hirsute on both sides or smooth above. The stem-L. numerous: the upper smaller, ovate, sessile. **p.** 7, 8. *Stony mountains.* Alps."—KOCH.

26. **villosum.** Stem 1- or more flowered, somewhat corymbose, woolly. Phyll. finely acuminate on an ovate base, lax: the outer widely spreading: all covered with white wool, as well as the Stalks: on these and on the upper part of the Stem a stellate pubescence. L. oblongo-lanceolate: upper ovate, amplexicaul. **p.** 6, 7. *Stony mountains.* Alps. *The following are the principal var. enumerated by DC.:—*

A. *Outer Phyllaries leafy. Flowers very large.*

- **α.** *cordifolium.* Upper stem-L. cordato-ovate.
- **β.** *eriophyllum*, WILLD. Stem usually 1-flowered. L. oblong, undulate.
- **γ.** *tricocephalum*, WILLD. Stem tall, usually 1-flowered. L. oblong. Root-L. stalked, nearly smooth.

B. *Outer Phyllaries not leafy, hardly larger than the others.*

- **δ.** *glabratum*, WILLD. Stem 1-flowered, 2-leaved at base. Root-L. smooth. *This is said to be the* glabrum *of Hoppe*, Schraderi *of Gaud.* (*which is also, I suppose, the species here called* Schraderi). *I cannot decide whether it is the* glabratum *of Koch, which I have above adopted as a species.*
- **ε.** *valdepilosum*, WILLD. Very villous. Stem long, leafy. L. dentate. Stem-L. oblong, acute. *Seems also to be the plant of Vill.*
- **ζ.** *scorzonerifolium*, VILL. Stem 1-flowered, few-leaved. L. lineari-lanceolate, acute, dentate.
- **η.** *acutifolium*, HALLER, Fil. Stem 1-flowered, leafy. L. lineari-lanceolate, acuminate, quite entire.

27. **Candollii.** "Villous. Stem branched, flexuose, many-flowered. Branches long, leafy, usually 1-flowered. L. lanceolate, somewhat denticulate, glaucous. Root-L. somewhat stalked. Stem-L. sessile. Phyll. tiled, obtuse, very villous. *Not to be distinguished from the branched var. of* H. villosum *but by the inner structure of the calyx.* **p.** Alps of Ger. Pyr."—DC.

ii. *Stem nearly leafless.*

28. **Schraderi.** Stem 1- or few-flowered, densely covered, as well as Phyll., with long, black-based hairs, and a stellate pubescence. Phyll. lax: outer spreading. L. lanceolate, acute, narrowed into a stalk. **p.** 6–8. *High pastures.* Alps.

29. **glanduliferum.** Stem 1-flowered, covered with stellate pubescence and short glandular hairs. Phyll. lax, woolly with dark-based hairs. L. green, lanceolate, minutely denticulate or quite entire. Root-L. tufted, few or 0 on stem. **p.** 7, 8. *Very high.* Alps.

D. PULMONARIÆ.

These seem distinguished from the preceding tribes by the evident and comparatively abrupt contraction of the root-L. into a haft or stalk. The Phyllaries, also, are not in general so finely acute; but this, as the divisions now stand, is not uniform in either.

i. *Calyx and Stalks without glandular hairs.*

30. **pallescens.** Stem simple, 1-flowered or supporting a corymb, 2–4-leaved. Hairs hoary, black at base. Root-L. attenuate into stalk with deep forward teeth at base. Lower stem-L. stalked; upper sessile. **p.** 6–8. (Sw. SCHL.)

31. **incisum.** Stem simple, 1-flowered or supporting a corymb, 1–2-leaved. Hairs hoary, black at base. Root-L. ovate or ovato-oblong, somewhat cordate, with deep spreading teeth at base. **p.** 6–8. *Mountains, occ.*

32. **bifidum.** Stem once or more forked,

naked or with a single lanceolate, nearly sessile L. Hairs simple, hoary, black at base. Root-L. elliptic, denticulate. Teeth at base forward or spreading. **p.** 6–8. *Rocks.* s. e. Ger.

33. **hoppeanum.** "Pubescent. Stem simple, few-flowered, nearly leafless. L. oblongo-ovate, coarsely dentate at base; their stalks villous. Cal. acuminate, and, with the stalk, cano-tomentosulous, hirsute. **p.** Alps. *Possibly a hybrid between* H. villosum *and* H. murorum."—DC.

34. **stelligerum.** "Cespitose, cano-tomentosulous with stellate hairs. Stem nearly leafless, forked, 2-flowered. L. coriaceous, cordato-ovate, sinuato-dentate at base; twice as long as the channeled, even, villous stalk. Phyll. cano-tomentose, obtuse. **p.** *Rocks.* Lang. *Differs from* H. murorum *in the fine, dense, stellate pubescence covering the whole plant; in the slender, tufted, forked, leafless stems; in the rigid, truly coriaceous, obtuse, glanduloso-muricate L., and channeled stalks without stripes, only one-fourth as long as L. The Fl. also are only half the size.*"—DC.

35. **chlorospermum.** "Root-L. remaining. Stem erect, leafy, panicled, villosulous at base. L. thin, membranous, glaucous beneath, somewhat reticulate, ciliate, denticulate. Root-L. stalked, ovate, acute. Stem-L. somewhat cordate, acuminate, sessile. Cal. and stalks nearly hairless. Phyll. lineari-obtuse. **p.** Carinthia."—DC.

36. **ramosum.** Stem branched from base, leafy. Panicle covered with simple, hoary, black-based hairs. L. *green*, ovato-lanceolate, narrowed at base. Teeth of the base spreading. Upper L. nearly sessile. **p.** 6–8. *Woods.* Mont Jovat. s. Sw. *Differs from* H. vulgatum *chiefly in the pubescence of the panicle and a peculiar habit.*—Koch.

37. **Virga-aurea.** "Stem leafy. Root-L. ovato-oblong, acute, green, persistent, much larger than those on the stem. Fl. in a raceme-like panicle. Cal. cylindrical. Phyll. adpressed: the inner rather obtuse. **p.** Vallombrosa."—Coss.

ii. *Calyx and Stalk with gland-tipped hairs.*

a. *L. attenuate.*

38. **vulgatum.** Stem corymbose, about 6-leaved, furnished at top with hoary stellate, with short glanduliferous, and with longer black hairs. L. elliptic or ovato-lanceolate, with forward teeth at base. **p.** 6, 7. *Woods, &c.*

α. *sylvaticum*, Sm.

β. *maculatum*, Sm. L. spotted.

γ. *Lachenalii*, Gm. L. narrower, lanceolate.

39. **nivale.** "Stem erect, leafy, branched, panicled, hairless. L. subcoriaceous, lanceolate, serrato-dentate in the middle, rough on margin, glaucescent beneath. Cal. ovate, rough with glands. **p.** *Gravelly banks.* Mont Ortels. *Closely resembles* H. boreale, *but has root-L. on short stalks at the time of flowering.*"—DC. Qu. if Mont Ortels is the Ortler Spitz?

40. **Schmidtii.** Stem corymbose, 1–3-leaved. Pan. with hoary stellate, short glanduliferous, and longer black hairs. L. ovato-lanceolate, with forward teeth at base. Stem-L. sessile, not deeply toothed. **p.** 6–8. *Rocks, occasionally.*

41. **rupestre.** Stem slender, with a few, long, straight, 1-flowered branches. Cal. and stalks with simple and glanduliferous hairs. Root-L. broadly lanceolate, acuminate, with a few unequal teeth. Stem-L. few, lanceolato-linear. **p.** 6, 7. *Rocks.* Vall. Pays de Vaud. Erlangen. *According to DC., the hairs are feathery, and a few of the inner Phyll. membranous and acute. Crest nearly white.*

42. **pictum.** "Stem somewhat branched, few-flowered, and, as well as the ovato-lanceolate, dentate L. and their stalks, covered with feathery hairs. Stem-L. solitary, lineari-lanceolate. Phyll. obtuse, hirsute, mealy. Crest nearly white. **p.** *Stony woods and vineyards.* Sw."—DC.

43. **lasiophyllum.** "Stem 2- or more flowered, somewhat corymbose. Pan. furnished with hoary, and with black glandular hairs. L. hirsute on both sides, entire, except a few teeth at base. Outer Root-L. ovate, wider towards the top and rounded. Outer Phyll. somewhat obtuse; inner acute. **p.** 6, 7. *Stony.* In the Draga Grube at Orlich on the Karst."—Koch.

b. *L. rounded at the base.*

44. **murorum.** Stem corymbose, 1–2-leaved. Pan. hoary, and furnished with black glandular hairs. L. hirsute beneath and on the margin. Root-L. somewhat cordate. Teeth at the base turned backward. (Outer Phyll. somewhat obtuse; inner acute, Koch.) **p.** 6–8. *Walls and barren.*

β. *murorum pilosissimum*, Linn. L. and stalks woolly.

45. **atrovirens.** "Stem few-flowered,

with 1 or no L., with scattered hairs at the lower part. L. ciliate, villous beneath, ovate, oblique. Stalks of root-L. very hairy. Upper part of Stem and Fl.-stalks covered with glandular hairs. Cal. hoary. Inner Phyll. acute or acuminate. **b. p.** 6, 7. *Shady hills.* Madonie."—Guss.

46. **siculum.** "L.-stalks nerved and erect. Stem very villous, and ciliate with long hairs. Root-L. on long stalks, oblongo-lanceolate, attenuate at each end, remotely toothed at base. Stem-L. ovato-oblong, amplexicaul. Fl. few, in a raceme. Stalks cottony, and, as well as the Cal., villous with long hairs. Phyll. all acute. **p.** 6–9. *Rough thickets.* Madonie."—Guss.

47. **Jacquinii.** Stem short, with 1- or 2-flowered, spreading branches, with simple and gland-tipped hairs. Root- and lower L. deeply dentate or somewhat pinnatifid; upper lanceolate, quite entire. Phyll. hirsute. **p.** 6, 7. *Rocks and stony.* Alps.

E. ANDRYALOIDEÆ.

These are distinguished from the *Villosæ*, which they most resemble, by the feathery hairs. The root-L. are not so suddenly contracted as in the *Pulmonariæ*; and the want of hairs on the teeth of the florets gives an artificial character to separate them from the *Cerinthoideæ*.

i. *Upper L. lanceolate, acuminate.*

48. **andryaloides.** Stem ascending: upper part nearly leafless, and furnished, as well as L. and Phyll., with feathery hairs. Lower L. obovato-oblong, stalked, toothed at base; upper lanceolate, acuminate. **p.** 6, 7. *Warm rocks.* Salève. Dau.

β. *undulatum*, Willd. Lower L. undulate at base.

γ. *pictum*, Pers. L. with brown spots.

49. **Liottardi.** Woolly. Stem branched from base. Branches ascending. Lower L. dentato-pinnatifid at base. **p.** 6, 7. Grenoble. *Much like* H. Jacquinii, *except in the woolliness.*—Koch.

50. **lanatum.** Densely woolly. Stem 2–6-flowered. Branches long. L. thick, ovate, entire, or with a small tooth or two near the base: lower stalked and obtuse; upper sessile, acuminate. **p.** 5, 6. *Open rocks.* Vall. Col di Tende. *This is* tomentosum *of Allioni, which seems the older name.*

51. **cordifolium.** "Glaucous. Stems somewhat tufted, panicled, few-leaved, nearly hairless. Root-L. elliptic, denticulate, ciliate on midrib and margin. Stalks very short, covered with feathery wool. Stem-L. cordate, acute, amplexicaul. Cal. obtuse: that and stalks glanduliferous. Recept. hirtulous. **p.** *On the rock* Baux de l'Afé near Prats de Mollo."—DC.

52. **mixtum.** "Feathery wool. Stem few-flowered. Root-L. obovate, quite entire, somewhat stalked. Stem-L. ovate, somewhat semi-amplexicaul. Cal. obtuse, very villous. Recept. hirtulous. **p.** La Piquetta. Pyr. Dau.?"—DC.

53. **symphytifolium.** "Villous. Stem erect, leafy, about 3-flowered. L. stalked, ovato-lanceolate, acuminate, nearly entire. Fl.-stalks tomentose. Phyll. somewhat acute. **p.** *Rocks.* Sie."—DC.

F. CERINTHOIDEÆ.

The hairy teeth of the florets seem to distinguish this section from all the others retaining their root-L.

i. *L. without glandular hairs.*

54. **cerinthoides.** "Glaucous. Stem straight, leafy, somewhat corymbose. L. membranous, nearly entire, ciliate. Stalks of obovate root-L. with a feathery beard. Stem-L. oblong, acute, cordate, amplexicaul. Fl.-stalks with glandular hairs. Recept. hirtulous. **p.** e. and central Pyr."—DC. Sc.?

55. **Lapeyrousii.** "Glaucous. Stem branched, few-flowered, leafy. L. somewhat membranous, denticulate, ciliate. Root-L. oblongo-obovate: stalks with feathery wool. Stem-L. ovato-cordate, semiamplexicaul. Cal. ovate. Phyll. acuminate, and, as well as the stalks, furnished with glandular and black hairs. **p.** Pyr. *Fl. twice as large as in* H. cerinthoides."—DC.

56. **phlomoides.** "Stem flexuose, few-flowered, woolly at base, smooth and leafless above. Fl.-stalks divaricate, fastigiate. L. oblongo-obovate, somewhat denticulate, apiculate, woolly with long feathery hairs. Stem-L. sessile, ovate, acuminate. Phyll. glandular at base, smooth at top: internal acuminate. Recept. hairy. **p.** Gavarnie and Gendre, Pyr."—DC.

57. **Lawsonii** (*saxatile*, Koch and Villars). Stem leafless below the long, slender branches. Branches usually 1-flowered, hoary, and with glandular hairs at top. L. elliptic, hirsute on both sides. Stalk densely bearded: those on branches elliptic, sessile; uppermost

very minute. Inner Phyll. acute. **p.** *Stony mountains.* Martigny. Dau.

58. **decipiens.** Stem somewhat corymbose, with 1 or 2 lanceolate, sessile L. below the branches. Root-L. broadly lanceolate, remotely dentate, hairy on midrib and margin. Outer Phyll. somewhat lax; inner adpressed, finely acute. **p.** 7, 8. *High.* Hoheneck.

59. **longifolium** (*Lawsoni*, Sm.). Stem 1- or more flowered, hirsute at base. L. broadly lanceolate, acuminate, on long stalks, hairy on midrib and margin. Stem-L. remote; upper ovato-lanceolate, semiamplexicaul. Fl.-stalks hoary, and with glandular hairs. Phyll. villous or densely glandular: outer acute, somewhat spreading; inner subulato-attenuate. **p.** 7, 8. *Gravelly mountain pastures.* s. and w. Sw. Sc.

60. **Sternbergii.** "Stem simple, with about 2 flowers and 1 L. L. obovate, somewhat denticulate, glaucous, thin, membranous. Cal. villous and glanduliferous. Teeth of Flts. very short, ciliate. **p.** Mount Schlossberg near Töplitz."—DC.

ii. *L. with glandular hairs.*

61. **Pseudocerinthe.** Stem 1–2-leaved, 2–5-flowered, not forming a distinct corymb. Branches spreading. Hairs yellowish, or black at base. L. soft, entire or only remotely denticulate. Root-L. oblongo-lanceolate. Stem-L. cordate, amplexicaul. **p.** 7, 8. *Stony hills.* Salève.—Koch.

✓ 62. **amplexicaule.** Stem 1–3-leaved below the spreading branches, 3- or more flowered, not distinctly corymbose. Hairs yellowish: upper black at base. L. rigid. Root-L. stalked, coarsely toothed at base; uppermost, and bracts ovate or cordate. Outer Phyll. lax; inner finely acute. **p.** 6, 7. *Open mountains.* Alps. Pyr. Sc. Sard.

✓ 63. **pulmonarioides.** Stem with 1 or more L. and 3 or more flowers, not forming a distinct corymb. Hairs yellowish: upper black at base. L. soft. Root-L. stalked, elliptico-oblong, coarsely toothed at base; upper lanceolate, sessile. Outer Phyll. lax; inner finely acute. **p.** 6, 7. *Mountain meadows. Var. of Sp.* 62?

✓ 64. **alpinum.** Stem with 1 or more sessile L. and 1 or few flowers, hoary with stellate hairs. Branches and Phyll. very villous with long, hoary, black-based hairs, and black glanduliferous hairs. Root-L. lanceolate, stalked. **p.** 6, 7. *Mountain pastures.*

α. *alpinum*, Linn. Stalk 1–3-leaved and 1-flowered.

β. *pumilum*, Hoppe. Less villous than α, 1-flowered.

γ. *Halleri*, Vill. Root-L. elliptico-oblong, toothed at base, 1-flowered.

δ. *sudeticum.* Stem with several lanceolate L. rarely as large as the root-L., 1–4-flowered.

65. **nigrescens.** "Stem usually 1-flowered. Root-L. broadly ovate, stalked, coarsely toothed. Stem-L. single, lanceolate. Phyll. covered with numerous black setæ and longer white-pointed hairs; linear, attenuate. Flts. externally hairy. **p.** 7, 8. *High rocks.* Grampians."—Bab. Sil.

66. **bellidifolium.** "Glanduliferous, green. Stem with 1 flower and usually 1 L. L. nearly entire. Root-L. obovato-spatulate. Stem-L. ovato-semiamplexicaul. Cal. involucrate, somewhat imbricate, rough with glands. Flts. somewhat pubescent. **p.** Alps of Carinthia and of Salzburg. *Certainly different from* H. alpinum *by its numerous glands, and the four lax outer phyllaries, forming a sort of involucrum.*"—DC.

67. **cydoniifolium.** Stem with 10–20 flowers, leafy from base. Pan. corymbose, with hoary stellate pubescence and glanduliferous and black hairs; the larger hoary at top. L. *green*, elliptic: lower stalked; upper sessile. *Habit of* H. vulgatum. **p.** 6, 7. *High grassy.* Riesengeb.

G. Intybaceæ.

No root-L. at the time of flowering. Stem leafy. Whole plant densely glanduloso-pilose. Teeth of Flts. hairless.

✓ 68. **albidum.** Viscid. Stem 1-flowered, or branched at base; each branch 1-flowered. L. elongato-lanceolate, repando-dentate: lower attenuate; upper sessile or amplexicaul. **p.** 7, 8. *Rocks and gravel.* Vosges. Alps.

H. Prenanthoideæ.

No root-L. at time of flowering. Stem leafy. Teeth of Flts. hairy.

i. *L. covered with glands.*

69. **picroides** (*ochroleucum*, Koch). L. cordate at base, amplexicaul: the lower somewhat fiddle-shaped, being contracted above the base. **p.** 7, 8. *Very high pastures.* Sw. *rare.*

ii. *L. without glands.*

✓ 70. **lycopifolium.** Branches and Cal.

sprinkled with glandular hairs. L. semiamplexicaul, inciso-dentate at base: upper somewhat cordate; lowest attenuate into stalk. *Seeds pale.* **p.** 7, 8. *Woods.* Carlsruhe. Freiburg, Baden.

71. **prenanthoides.** Cal. and Stalk somewhat tomentose and densely covered with glandular hairs. L. cordate at base and amplexicaul: the lower somewhat fiddle-shaped, being contracted above the base. **p.** 7, 8. *Mountain woods.*

α. L. denticulate.

β. *perfoliatum*, DC. L. nearly entire.

γ. *strictissimum*, DC. L. with acute porrect teeth at the base.

δ. *denticulatum*, Sm. L. sessile, hardly amplexicaul (black-based hairs more numerous, and setæ fewer than in α, Bab.).

ε. *cotoniifolium*, DC. Fl. much larger.

I. ACCIPITRINÆ.

No root-L. at time of flowering. Stem leafy. L. without glandular hairs. Teeth of Flts. hairless.

i. *Flowers in racemes.*

72. **inuloides.** "Stem erect, simple. Pan. stellato-pubescent. Phyll. numerous: the lower gradually shorter; the lowermost lax, and passing downwards on the smooth stalk. L. all sessile: lowermost narrowed downwards; intermediate narrowed above their base. **p.** 8. *Mountain woods.* Sc. Boh."—Bab.

73. **racemosum.** Branches rigid, ending in a 3–4-flowered raceme. Lateral Fl.-stalks not longer than bracts. Cal. nearly smooth, oblong, conical after flowering. Upper L. ovate, acuminate, somewhat amplexicaul. **p.** 7, 8. *Waste and borders of woods.* Styria.

ii. *Flowers in panicles.*

74. **lactucaceum.** "Hairless. Stem erect, leafy, panicled. L. membranous, ovate, somewhat acute, serrato-dentate, ciliate at base, glaucous beneath. Lower Stem-L. crowded, sessile; upper alternate, ovato-cordate, somewhat amplexicaul. Cal. smooth. Stalks canosubtomentosulous. *Base of Stem leafless.* **p.** Italy."—DC.

75. **sabaudum.** Stem rigid, somewhat corymbose. Fl.-stalks hoary, conspicuously longer than the supporting bract. 1 or 2 Scales under the Cal., which is broadly ovate after flowering. L. ovate, dentate: lower on short stalks; upper cordate, somewhat amplexicaul. Phyllaries adpressed. **p.** 8, 9. *Thickets, heaths, &c.*

76. **lucidum.** "Hairless. Stem woody, angular, straight, corymbose. L. crowded, rigid, coriaceous, ovate, quite entire, apiculate. Stalks of the lower L. dilated at base and somewhat amplexicaul. Cal. very blunt: that and the stalks rough with glands. **p.** *Rocks.* Sic."—DC.

77. **crinitum.** "Stem racemose, very villous, leafless at base, densely leafy above. L. glaucescent, ciliate on margin and midrib: lower broadly ovate, acute, stalked; upper ovate, acuminate, sessile. Fl.-stalks and leafy bracts very villous. Cal. nearly smooth. **p.** 7, 8. *Rocks.* Madonie. Sard." *According to Guss., the L. of this and the preceding species remain during flowering. They probably belong to the* Pulmonariæ.

78. **jacobæifolium.** "Stem straight, leafy, branched, panicled. L. ovato-lanceolate, with large forward teeth, rough, reticulate beneath: lower somewhat stalked; upper sessile. Fl.-stalks scaly and somewhat thickened at top. Phyll. somewhat squarrose, hairless. **p.** Pyr."—DC.

79. **boreale.** Stem rigid. Branches somewhat corymbose. Fl.-stalks hoary, conspicuously exceeding the bracts. Scales numerous towards the top, passing into the ovate base of the fruit. L. ovato-lanceolate, dentate: lower attenuate into a short stalk; upper sessile. Phyll. adpressed, nearly of one colour throughout, becoming black when dry. **p.** 8–10. *Thickets, heaths, &c.*

β. *latifolium.* Upper L. somewhat cordate. Outer Phyll. somewhat spreading.

80. **rigidum.** "Stem erect, smooth, leafy, corymbose. L. ovato-lanceolate, narrowed at both ends: upper lanceolate or lineari-lanceolate, finely-toothed, nearly sessile; lowermost evanescent. Phyll. nearly smooth, adpressed, with pale margin. **p.** 6, 7. *Mountains.* n. Wales. n. Eng."—Bab. *Woods and thickets* in Ger.

β. *lanceolatum*, Villars. Cal. and stalk sprinkled with glandular hairs.

81. **brevifolium.** "Stem erect, densely leafy, corymbose at top. L. rigid, shortly ovate, with 2 teeth on each side, sessile, glaucous beneath, rough on margin. Fl.-stalks hoary. Cal. somewhat imbricate. **p.** Cevennes."—DC.

✓ 82. **umbellatum.** Stem rigid. Upper branches forming an umbel. L. lanceolate or linear: lower attenuate into a short stalk; upper nearly sessile. Tips of the Phyll. recurved. **p.** 7–9. *Heaths and sandy woods.*

β. *coronopifolium*, Bernh. L. with 2 or 3 long teeth on each side.

83. **prostratum.** "Very villous. Hairs simple. Stem ascendenti-prostrate, densely leafy, with a divaricate corymb. L. oblongo-ovate, somewhat dentate, sessile. Fl.-stalks tomentose and hirsute. Cal. hirsute, at last becoming smooth. *The whole plant often becomes smooth.* **p.** *Sandy shores.* Mouth of the Adour."—DC.

✓ 84. **eriophorum.** Woolly: hairs simple. Stem straight, densely leafy. L. ovato-lanceolate, serrato-dentate, sessile. Corymb somewhat compact. Base of Cal. woolly. **p.** *Sandy shores.* Bayonne. Tête de Buch.

The two following I do not know where to place:—

85. **gracile.** "Stem erect, simple, few-leaved, somewhat corymbose. L. membranous, somewhat dentate, stalked, villosulous. Root-L. elliptico-oval. Stem-L. lanceolate. Cal. ovato-cylindrical, rather acute. Cal. and stalks glanduloso-hispid. *Hairs of L. almost feathery. Cal. and stalks covered with numerous black glands and scattered hairs.* 4–6 of inner Phyll. acute. **p.** *High.* s. Tyr."—DC.

86. **compositum.** "White with woolly hairs. Stem erect, branched, leafy, panicled. Branches spreading, mostly many-flowered. L. dentate, glaucous beneath. Root-L. ovate, decurrent on a bearded stalk. Stem-L. cordate, acuminate, amplexicaul. Cal. somewhat glanduliferous. Stalks tomentose and somewhat glanduliferous. **p.** *Dry stony meadows.* Prats de Mollo. Pyr."—DC.

DC. adds 20 species, *non satis notæ*, as occurring within the limits of my work, but which I omit, thinking it impossible to identify the species from the descriptions. For the same reason I have omitted to notice *H. primulifolium* of Viv.

410. MULGEDIUM.

✓ 1. **alpinum.** Rac. nearly simple, glanduloso-hispid. Lower L. sagittate, lyrato-runcinate. Bracts linear, acuminate. **p.** 7, 8. *High woody.*

✓ 2. **Plumieri.** Pan. compound, quite smooth. Lower L. runcinato-pinnatifid. Bracts auricled. **p.** 7, 8. *High woody.* w. Sw. Vosges. Auvergne.

Tribe XI. *SONCHEÆ.*

411. ZOLLIKOFERIA.

1. **chondrilloides.** L. variously divided. Lower L. attenuate; upper cordato-semiamplexicaul. Phyll. adpressed, obtuse, somewhat callous at top. **p.** 5, 6. *Sandy.* s. Fr. Sic.

412. SONCHUS.

A. *Annual or biennial.*

1. **oleraceus.** Stem-L. amplexicaul, acutely dentate, ciliate: auricles acuminate. Cal. and Stalk nearly smooth. Seeds transversely muriculate. **a.** 6–8. *Fields.* ✓

2. **asper.** L. amplexicaul, acutely ciliato-dentate: auricles rounded. Cal. and Stalk sometimes somewhat hispid. Seeds smooth, with three nerves on each face. **a.** 6–8. *Fields.* ✓

3. **parviflorus.** "L. amplexicaul, runcinato-pinnatifid, spinuloso-dentate. Invol. cylindrical, smooth, on long, smooth, corymbose stalks. Seeds smooth and very small. **a.** Verviers. *Distinguished from the preceding by its more slender stem, smaller flowers, and cylindrical calyx.*"—Lej.

4. **tenerrimus.** L. auricled, amplexicaul, pinnatipartite or bipinnatipartite. Cal. at first tomentose at base. Seeds slender, striated, transversely rugose. **a.** or **b.** 6, 7. *Rocks and walls.* s. Eur.

B. *Perennial.*

5. **pectinatus.** Stem angular, hairless. L. pectinate: divisions crowded, ovate, acute. Upper L. auricled. Cal. hairy. Seeds with obtuse tubercled ribs. **p.** 6. *Marit. rocks.* Near Collioure.

6. **maritimus.** Smooth. Root creeping. Stem few-flowered. L. lanceolate, amplexicaul, undivided. Serratures acute, retrorse. Outer Phyll. broadly ovate, with blunt acumen. Ribs of the Seeds smooth. **p.** 6, 7. *Coasts.* s. Europe. ✓

7. **arvensis.** Root creeping. Stem smooth, corymbose. L. runcinate, spinuloso-dentate, cordato-amplexicaul. Cal. and Stalks hispid. Seeds usually 4-edged, transversely rugose on the ribs. **p.** 6, 7. *Clayey fields.* ✓

8. **Nymanni.** "Smooth. Root creeping. L. obovato-oblong, runcinato-pinnatifid, with long, sharp, spinulose teeth. Root-L. stalked. Stem-L. cordato-amplexicaul. Fl.-stalks somewhat umbellate. Seeds smooth, margined, with 5 nerves on each side. **p.** 4, 5. *Clayey fields.* Vicari. Alia in Sic."—Guss.

9. **palustris.** Root simple, somewhat tuberous. Stem hairless at base, hispid at top, as well as Cal. and Stalks. L. lanceolate, sagittate, spinuloso-ciliate. Lower L. runcinate; upper undivided. **p.** 6, 7. *Marshy meadows and clayey banks, occ.*

413. PICRIDIUM.

1. **tingitanum.** All L. runcinato-pinnatifid, semiamplexicaul, denticulate. Outer Scales of Cal. squarrose. Stalks scaly. **p.** *Sea rocks.* Sic.—DC.

2. **vulgare.** Stem naked at top. Lower L. pinnatifid; upper entire, somewhat dentate, amplexicaul. Scales of Cal. adpressed. Stalks scaly. **p.** 4, 5. mdt. Fr. It. Istr.

414. PRENANTHES.

1. **tenuifolia.** Stem erect, simple. L. linear, very entire. Stem-L. amplexicaul. Pan. lax. Fl. stalked, nodding. **p.** *Woody mountains.* Dau. Monte Generoso.

2. **purpurea.** Stem erect, simple. L. lanceolate, attenuate, somewhat denticulate. Pan. lax. Fl. on long stalks, nodding. **p.** 7, 8. *Woody hills.*

Tribe XII. *CREPIDEÆ.*

415. PTEROTHECA.

1. **nemausensis.** L. runcinato-lyrate, dentate, obtuse. Scape naked, many-flowered, hispid. Scales of Cal. membranous on margin. **a.** 6. *Dry.* mdt. Fr. It.

416. ZACYNTHA.

1. **verrucosa.** Root-L. lyrate. Stem-L. sagittate. Fl. sessile. **a.** 6. *Fields.* mdt. Fr. It. Istria.

417. ENDOPTERA.

1. **Dioscoridis.** Stem and L. smooth. Phyll. somewhat hoary: outer small, lineari-subulate. **a.** Fr., Linn.; Pdm., Balbis; Belg., Rchb.:—*all doubtful.*

2. **aspera.** Stem with scattered bristles. Outer Phyll. ovato-lanceolate, scariose, prickly on the back. **a.** Fréjus (or Friuli ?), Suffr. Sic.? Vaillant.

418. ÆTHEORHIZA.

1. **bulbosa.** Root tuberous. Scape erect, simple, leafless. Cal. hairy at base. **p.** 4, 5. *Sandy shores.* s. Eur.

419. CREPIS.

A. Seeds with from 10 to 13 stripes.
  i. Calyx double. Outer Phyllaries very small, adpressed. Sp. 1, 2.
  ii. Calyx double. Outer Phyll. about half as long as inner. Sp. 3–8.
  iii. Calyx tiled.
    a. Scape 1-flowered, nearly or quite leafless. Sp. 9–12.
    b. Scape many-flowered, nearly leafless. Sp. 13–15.
    c. Stem branched, leafy. Sp. 16–18.
B. Seeds with 20 or more stripes.
  i. Stripes 20. Sp. 19–23.
  ii. Stripes 30. Sp. 24.
C. Hairs of Crest somewhat subulate. Stem one-flowered. Sp. 25, 26.

A. *Seeds with from 10–13 stripes.*

i. *Calyx double. Outer Phyllaries very small, adpressed.*

1. **pulchra.** Flts. few. Striæ of the Seeds nearly obsolete. Pits of Recept. not fringed. Cal. cylindrical, smooth. Outer Phyll. ovate, acute. Stem panicled. Root-L. runcinate. Stem-L. ovato-lanceolate, sagittate. **a.** 6, 7. *Vineyards and broken grounds.*

2. **lacera.** Cal. tomentose. Outer Phyll. linear. Stem panicled, many-flowered. Pits of Recept. somewhat fringed. Root-L. runcinato-pinnatipartite. Stem-L. linear, pinnatifid at base. *Sap milky, very poisonous.* **b.** 7. *Calc. mountains.* Rome. Naples.

Ten. !

ii. *Calyx double. Outer Phyllaries about half as long as inner.*

3. **neglecta.** Seeds contracted at top into a short neck, rough with minute points. Inner Phyll. smooth within. Stem leafy. Branch-

lets 2–3-flowered, nodding before flowering. Upper L. sagittate. **a.** 4, 5. *Barren uncult.* mdt. Fr. adr. G. It.

✓ 4. **tectorum.** Seeds somewhat contracted into a neck, rough with minute points. Inner Phyll. hairy within. Stem branched from near the base. Upper L. lineari-sagittate. Margin revolute. **a.** 6–9. *Uncult.* m. Eur. *occ.*

✓ 5. **biennis.** Seeds smaller at top but not contracted into a neck, rough with very minute points. Inner Phyll. hairy within. Stem corymbose at top. Lower L. runcinato-pinnatifid; upper lanceolate, dentato-pinnatifid. **a.** 5, 6. *Meadows and moist pastures.*

I gathered at Munich, where it was abundant, in August 1844, a plant with the flowers and fruit of this, but in foliage and habit more like *virens*: Query if a species.

✓ 6. **nicæensis.** Seeds not contracted into a neck. Ribs smooth. Inner Phyll. smooth within. Stem corymbose at top. Stem-L. flat, sessile, sagittate: the auricles acuminate downwards. **b.** 5, 6. *Dry pastures and rough.* s. Fr. Nice. Ger. *occ.*

✓ 7. **virens.** Seeds smooth. Inner Phyll. smooth within; outer erect. Stem panicled nearly from base. Stem-L. sagittate and often incise at the base; upper linear, flat.

α. 6–9. *Fields and waysides.*

β. *diffusa,* DC. Stems diffuse.

γ. *agrestis,* W. K. Fl. larger.

8. **corymbosa.** “Hispid with spreading bristles. Stem erect, paniculato-corymbose at top. Root-L. spatulato-runcinate, attenuate into stalk. Stem-L. lanceolato-sagittate, incise at base. Cal. hispid, equalling crest. Seeds oblong, striato-sulcate, glabrous. **a.** *Stony.* Apulia and Camp.”—DC.

iii. *Calyx tiled.*

a. *Scape one-flowered, nearly or quite leafless.*

9. **bulbosa.** Fibres of Root bearing tubers. Base of Cal. and top of Scape hairy. L. oblongo-lanceolate, somewhat dentate, hairless. **p.** 4, 5. *Sandy pastures.* s. Fr. It. Ist.

✓ 10. **aurea.** Fibres of Root without tubers. Scape very rarely branched. L. oblong, dentate or runcinate. Phyll. covered with black hairs. **p.** 7, 8. *Mountain pastures.* Alps.

11. **chrysantha.** Fibres of Root without tubers. Cal. and top of Scape densely covered with somewhat flexuose, yellow hairs. L. oblongo-lanceolate, obtuse, attenuate. **p.** 7, 8? Val Bagne in the Vallais.

12. **Columnæ.** “Root præmorse. Scapes tufted, filiform, nearly hairless. L. somewhat lanceolate, runcinato-dentate, nearly hairless. Cal. nearly cylindrical, mealy. **p.** Monte Pollini. Cal. *Habit of* Thrincia. *Buds nodding.*”—DC.

b. *Scape nearly leafless, many-flowered.*

13. **præmorsa.** Fl. in a raceme, *yellow.* Lower Stalks 1–3-flowered. L. ovali-oblong, attenuate, denticulate, pubescent. **p.** 5, 6. *Stony calc. hills.* m. Eur. ✓

14. **incarnata.** Fl. in a corymb, *pink.* Cal. cylindrical, hairless. L. oblongo-obovate, attenuate, crenato-denticulate, softly hirsute. **p.** 5, 6. *Rough hills.* Carinthia. s. Tyr. ✓

β. *frœlichiana.* Fl. yellow.

15. **pulmonariifolia.** “Stem erect, nearly leafless, with few flowers. L. membranous, reticulate, ciliate, glaucescent. Root-L. cordato-ovate, denticulate, on villous stalks. Stem-L. bract-like. Cal. cylindrical, smooth, slender. **p.** Apenn.”—DC.

c. *Stem branched, leafy.*

16. **paludosa.** Crest somewhat yellowish, rigid, fragile. Bracts and Cal. covered with black hairs. Stem corymbose, leafy. L. retrorsely dentate. Root-L. oblong, attenuate. Stem-L. hastato-amplexicaul: upper part entire, ending in a long, very acute acumen. **p.** 6, 7. *Moist hill woods.* ✓

17. **chondrilloides.** Crest somewhat yellowish. Cal. oblong. Stem erect, few-flowered, smooth. L. lanceolate, smooth: earliest entire; others pinnate or deeply pinnatiparte. Divisions cut immediately into numerous linear segments. **p.** 7, 8. *Stony.* e. Alps. ✓

18. **fœniculacea.** “Crest white. Pits of Recept., when young, lacerate. Cal. ovate. Cal. and Stalk albo-tomentose. Stem erect. Panicle furrowed, somewhat leafy, glanduloso-hispid. L. pinnate. Segments linear, mucronate, entire or deeply divided, unequally decurrent. **p.** 6, 7. *Open rocky.* Carniola. Trieste. Fiume.”—DC. *Considered by Koch as a var. of* chondrilloides.

B. *Stripes of Seeds* 20 *or more.*

i. *Stripes* 20.

19. **succisæfolia.** L. oblong, obscurely toothed. Root-L. attenuate. Stem-L. amplexicaul: the lower contracted above the base. ✓

Pan. glanduloso-pilose. **p.** 7, 8. *Mountain meadows.* Ger. Sc. Auv. Pyr.

α. mollis. Hieracium molle, Jacq. L. softly pubescent.

β. integrifolia. H. integrifolium, Hoppe. L. hairless.

20. **pygmæa.** Cal. cano-floccose, on long and nearly simple stalks. L. stalked, lyrate: terminal lobe somewhat cordate, dentate, very large (lateral alternate, minute). **p.** 7, 8. *Snowy.* Alps. Pyr.

21. **lapsanoides.** "Stem striped, paniculato-corymbose, hairy. L. hairy. Lower L. lyrato-dentate, auriculato-amplexicaul; upper L. cordato-amplexicaul, entire. Cal. and Stalks glanduloso-hispid. Phyll. acute, tiled. **p.** 6, 7. *Woods.* e. Pyr. Carinthia."—DC.

22. **blattarioides.** L. oblong, dentate. Stem-L. amplexicaul: the basal lobes acuminate. Outer Phyll. almost equalling inner: all covered with long, simple hairs. **p.** 7, 8. *Mountain meadows.* Sw. Sav. Dau.

23. **grandiflora.** L. glanduloso-pubescent. Root-L. oblongo-lanceolate, attenuate. Stem-L. amplexicaul, sagittate. Outer Phyll. spreading, about half as long as inner: all hirsute. **p.** 7, 8. *Mountain pastures.* Alps. Pyr.

ii. *Stripes* 30.

24. **sibirica.** L. wrinkled, elliptico-oblong. Lower stem-L. attenuate into a deeply-toothed, amplexicaul haft. Outer Phyll. lax, shorter than inner. **p.** 7, 8. *Mountain woods.* Silesia.

C. *Hairs of Crest somewhat subulate. Stem one-flowered.*

25. **hyoseridifolia.** Cal. thick and very hairy. Stem leafy, thickened upwards. All L. lyrato-runcinate, stalked: uppermost linear. **p.** 7, 8. *Very high.* Sw. s. w. G.

26. **montana.** Edges of Pits of the Recept. finely lacerate. Cal. very hairy. L. elliptico-oblong, dentate. Stem-L. amplexicaul. Stem leafy at base. **p.** 6, 7. *Mountain meadows.* s. w. G. Sw. Fr.

ætnensis, Presl.
glandulosa, Bastard.
lævigata, Dumortier.
paniculata, Presl.
} Not well known.

420. BARKHAUSIA.

A. *Long beaks to all the seeds. Calyx tiled.*

1. **albida.** Outer Phyll. ovate; inner acuminate. Stem nearly naked and nearly simple. L. rough. Most of the root-L. runcinato-dentate. Stem-L. lanceolato-oblong, amplexicaul. **p.** *Fissures of rocks.* Alps of Dau. and Piedmont.

2. **alpestris.** Outer Phyll. linear; inner somewhat obtuse. Stem 1-flowered, nearly leafless, tomentose at top. L. runcinate and dentate. Stem-L. oblong, sessile, toothed. **p.** 6, 7. *Dry rocky.* Alps of Sw. Danube. *The Seeds are clearly beaked, though the beak is a thick one.*

B. *All the Seeds nearly equally beaked. Calyx calycled.*

i. *Outer Phyllaries broad, scariose. Bracts scariose.*

3. **alpina.** "Somewhat hairy. Stem erect, striate, forked at top or somewhat corymbose. L. dentate: lower obovato-oblong, attenuate; upper auriculato-semiamplexicaul. Fl. on long stalks. Outer Phyll. wide ovate, hairless: inner rough with torulose scales. **a.** *Mountains.* Prov. Pdm."—DC.

4. **vesicaria.** Outer Phyll. not mucronate; inner even, nearly smooth, sometimes hoary and hairy. L. runcinato-dentate or runcinato-pinnatifid. **b.** 5, 6. *Pastures and road-sides.* It. Fiume. *According to Koch, it is* vesicaria *when the outer phyllaries are much shorter than the inner,* scariosa *when they are nearly equal. DC. seems to make the difference depend on a L. merely sinuate in* vesicaria, *and runcinate in* scariosa.

5. **purpurea.** Hardly hairy. Stem somewhat panicled, few-leaved. Root-L. stalked, lyrato-runcinate. Stem-L. semiamplexicaul, cordato-lanceolate. Outer Phyll. somewhat mucronate. *Differs from* vesicaria *in the purple flowers and longer beaks to the seeds.* **p.** Apul. Pal.—DC. **a.** 5, 6. *Open pastures.* Sic.—Guss.

ii. *Outer Phyllaries narrow, not scariose, or only so on the margin. Bracts leafy.*

a. *Perennial.*

6. **taraxacifolia.** Outer Phyll. lanceolate or ovato-lanceolate. Seeds with 10 stripes. Stem erect, leafy, corymbose, *purple at the base.* Root-L. stalked, lyrato-runcinate or runcinato-pinnatifid. **p.** 5, 6. *Dry gravelly or calc.*

β. præcox, Duby. Upper L. auricled.

γ. intybacea. Upper L. auricled. Phyll. hairless.

7. **bursifolia.** Smooth. Cal. *hispid,* cylindrical. Outer Phyll. lineari-subulate. Fl.

somewhat corymbose. Root-L. stalked, lyrato-pinnatipartite. Div. oblong, dentate. Stem-L. very few, sessile. **p.** 4–9. *Dry hills.* Palermo. Gaeta.

β. balbisiana. Phyll. not hispid.

8. **spatulata.** "Smooth. Stem branched: upper part nearly naked. Root-L. spatulato-oblong: upper part retrorsely denticulate. Stem-L. very few, sessile, lanceolate, quite entire. Branches 1-flowered. Scales few. Cal. hairy. Outer Phyll. half or one-third as long as inner, erect, acute, with a narrow scariose margin. **p.** 11–5. *Clay.* Sic."—Guss.

9. **cæspitosa.** "Rhizoma tufted. Stems simple, 1-flowered, or with 1–2 1-flowered branches. Lower L. obversely lanceolate or spatulate, somewhat repando-dentate; upper linear, entire. Buds drooping. Phyll. hirtulo-pubescent: outer narrow linear, lanceolate. Seeds with 10 or 12 stripes, at last a little shorter than the calyx. Pits of the Recept. fringed. **p.** 6. *Calc. rocks.* Monte Olione in Sard."—Moris.

b. *Annual or biennial.*

✓ 10. **setosa.** Phyll. and Bracts armed with prickle-like spines. Outer Phyll. lanceolate, spreading. Stem erect, branched, leafy. L. dentato- or lyrato-runcinate: upper sagittate, inciso-dentate at base, or quite entire. Fl.-buds erect. **a.** 7, 8. *Fields and vineyards.* s. G. s. Fr. Italy.

✓ 11. **leontodontoides.** Phyll. and Bracts smooth. Outer Phyll. lineari-subulate. Seeds with 10 stripes. Stem branched, with only a few, linear, entire L. Fl.-stalks long. **b.** 5, 6. *Woods and thickets.* Lig. Sic.

C. *Outer Seeds without a beak or with a short one; inner with a long one. Outer Phyllaries small.*

12. **rubra.** Outer Phyll. lanceolate, acuminate, smooth; inner shorter than the central seeds. Stem leafy at base, branched, naked at top. Root-L. pinnatifido-runcinate, stalked. Stem-L. sessile, lanceolate, incise at base. *Fl. pink.* **a.** 6, 7. *Pastures and waysides.* K. Nap. Nice? Oscro. Mtp.? Agen?

13. **glandulosa.** Cal. and Stalk rough with glandular hairs. Stem quite simple at base, corymbose. Lower L. runcinate, stalked; upper lanceolate, sagittate, sessile, dentate at base. **a.** 4–6. *Dry calc.* Bocco di Falco, Nap. Catania.

✓ 14. **fœtida.** Hispid. Fl. drooping in the bud. Phyll. hairy: the outer lanceolate. Seeds with 12–20 stripes. Stem corymbose. L. acutely runcinato-pinnatifid: lower stalked; upper hastato-lanceolate, incise at the base. **a.** *Dry fields and borders.*

15. **rhæadifolia.** Rough. Phyll. glandular and villoso-hispid. Stem branched, diffuse. L. runcinate. Div. acuminate, acutely dentate. **a.** 6, 7. Brunn in Moravia.

16. **bellidifolia.** "Outer Phyll. narrow, lanceolato-linear; inner longer than central seeds. Seeds with 10 stripes. Lower L. entire or runcinato-pinnatifid; middle auricled, or sometimes sagittate; upper linear, entire. Fl.-buds drooping. **a.** 4, 5. *Sandy shores and uncult.* Sard." — Moris. *The description does not distinguish this from the preceding. DC. puts it with the species where all the seeds are equally beaked, which, according to Moris, is not the case.*

sardoa, Sprengel.	Not well known.
pinguis, Rchb.	
juvenalis, Delile.	
prostrata, Dumont.	
tenerrima, Tenore.	

Tribe XIII. *CHONDRILLEÆ.*

421. PHÆNOPUS.

1. **vimineus.** Stem terete, smooth. Lower L. pinnatipartite; upper undivided: all decurrent. Fl. in a spike-like raceme. **b.** 7, 8. *Stony vineyards, &c.* s. Fr. s. e. G.

β. ramosissimus. (*Prenanthes ramosissimus*, Allioni.) Branches spinescent. *Sandy shores.* Nice.

422. LACTUCA.

A. *Outer Phyll. about half as long as inner.*

i. *Seed with a single elevated line on each side. Flowers blue or purple. Stem erect in all.*

1. **perennis.** Smooth. Stem nearly naked at top, with a loose, corymbose panicle. All L. pinnatipartite. Stalks long, bracteolate. **p.** ✓ 6, 7. *Open rough hills.* m. and s. Eur.

2. **tenerrima.** Sometimes hispid at base. Branches divaricate. Lower L. lyrato-pinnatipartite; uppermost sagittate, entire. ✓ Fl.-stalks nearly without bracts. **p.** *Rocky hills.* Narb. Rous.

3. **cichoriifolia.** Smooth. Stem nearly

naked at top. Pan. lax, corymbose. Lower L. attenuate, acuminate, runcinato-dentate. Teeth somewhat retrorse. Uppermost L. lanceolato-linear, sagittate, quite entire. Stalks bracteolate. *Var. of Sp.* 1? **p.** 6, 7. e. Pyr.

4. **segusiana.** Smooth. Stem erect, much branched. Lower L. attenuate, sessile; upper L. linear, sagittate. Branches 1-flowered, with numerous bracts. **b.** *Hill vineyards.* Susa.

ii. *Seeds with many elevated stripes. Flowers yellow.*

5. **saligna.** Stem smooth, panicled. L. nearly vertical, prickly on keel: lower lanceolate, pinnatifid. Stem-L. linear, sagittate, quite entire. Seeds half as long as white beak. **a.** (**b.** Koch.) *Fields and borders. Likes a little salt.*

6. **Scariola.** Pan. pyramidal. L. vertical, prickly on the keel, runcinato-pinnatifid, sagittate, acute. Seeds striate, about as long as white beak. **a. b.** 7, 8. *Rough hills and waysides.*

7. **virosa.** Pan. spreading. L. horizontal, prickly on keel, acutely denticulate, obtuse, sagittate. Lower L. sinuate. Seeds about as long as white beak. **a. b.** 7, 8. *Banks and uncult.*

8. **sativa.** L. erect, oblong, attenuate, smooth on keel. Stem long, leafy. Beak white, about as long as seed. **a.** 6, 7. *Escapes.*

9. **stricta.** Pan. corymbose. L. smooth beneath. Root- and lower L. runcinato-lyrate, dentate. Upper L. runcinato-pinnatifid, attenuate, sagittate. Divisions acuminate. Seeds twice as long as black beak. **b.** 7, 8. *Stony hills.* Tende. Rosslesen. e. G.

10. **sagittata.** Pan. corymbose. L. smooth beneath, sagittate: the points short. Root-L. sinuato-dentate; upper lanceolate, acuminate, quite entire. Seed twice as long as black beak. **b.** 7, 8. *Woods.* Brunn in Moravia.

11. **Chaixi.** Fl. in a raceme. L. smooth beneath. Root-L. lyrato-runcinate. Stem-L. lanceolate, sagittate, dentate. Seeds about twice as long as black beak. **a.** *Shade.* Les Baux, Rabon, and Chandun in Dau.

12. **longidentata.** Pan. crowded. Root-L. lanceolato-spatulate, attenuate into stalk. Stem-L. auricled, decurrent. Fl.-stalks bracteolate. Seed twice as long as black beak. **a. b.** 5. *Calc. rocks.* e. Sard.

B. *Outer Phyll. very minute. Calyx cylindrical. Beak distinct, but not half as long as seed.*

13. **muralis.** Smooth. Pan. broad and lax. L. attenuate into a winged, amplexicaul stalk, lyrato-pinnatipartite, toothed, thin: terminal division angular. **a.** 7, 8. *Woody. Prenanthes muralis,* Linn.

423. TARAXACUM.

A. *Scape simple, 1-flowered. Seeds with long Beaks. Outer Phyllaries spreading.*

1. **officinale.** Quite smooth. Seeds muricate at top. Phyll. without horns; the outer reflected. **p.** 5, 6. *Meadows, &c.*

2. **lævigatum.** "Nearly smooth. Seeds pale, spinuloso-muricate at top. Phyll. callous at the tip. Beak thickened at the base, longer than seed. L. runcinato-pinnatipartite. Segments unequal, lanceolate, acuminate, somewhat dentate. **p.** *Meadows, pastures, and dry hills.*"—DC.

3. **corniculatum.** Smooth. Seeds muriculate at top. Phyll. horned below the tip. Young Scales cottony at top. L. dentate or somewhat runcinate. **p.** *Sandy pastures.* Austria.—DC. *Koch considers these three as one species.*

4. **serotinum.** Phyll. linear, acuminate, hornless. Seeds striate, narrowed at each end, muriculate at top, nearly as long as beak. (Uncoloured part of Beak as long as the seed and coloured part, Koch.) L. rough on both sides, and somewhat rigid; the earliest nearly entire, the rest runcinato-pinnatifid, with triangular divisions, and acute forward teeth. **p.** 7–9. *Dry clayey hills.* Moravia.

5. **tenuifolium.** Seeds lineari-obovate, squamoso-muricate at top. Uncoloured part of Beak not as long as the seed and coloured part. L. lineari-lanceolate, entire or remotely denticulate. **p.** 4, 5. *Moist places. Salines* of Zaule near Trieste.

6. **erythrospermum.** "Seeds intensely rufous, spinuloso-muricate at the top. Beak with a coloured, callous base. Phyll. somewhat horned. L. smooth, runcinato-pinnatipartite. Lobes narrowly triangular or lanceolate. **p.** *Dry pastures.* All Europe."—DC. *Probably a var. of* T. officinale *or* lævigatum.

7. **obovatum.** "Smooth. Seeds rufous, muricate, half as long as beak. Phyll. calloso-corniculate. Root-L. flat on the ground,

obovate, hardly dentate; later ones runcinato-pinnatifid. **p.** *Moist and fields.* s. Eur."—DC.

8. **alpestre.** Quite smooth. Beak angular, shorter than seed! Outer Phyll. ovate. L. lyrato-runcinate. Divisions 5, remotely denticulate. **p.** Riesengebirge. *Not in Koch.*

B. *Outer Phyllaries erect.*

✓ 9. **palustre.** Smooth. Seeds spinuloso-muricate at top, not half as long as beak. Phyll. hornless; the outer lanceolate, acute. **p.** 6, 7. *Marshy.*

10. **minimum.** "L. oblong-ovate; the first entire, the others runcinato-pinnatifid. Segments ovate. Outer Phyll. mucronate below the summit. **p.** 9, 10. Monte Peregrino near Palermo."—Guss.

424. WILLEMETIA.

✓ 1. **apargioides.** Scape many-flowered. Cal. black-haired. **p.** 7, 8. *Mountain woods.* s. G. Sw. Pyr.

425. CHONDRILLA.

✓ 1. **juncea.** Stem setose at base, smooth above, branched, nearly leafless. Root-L. runcinate, somewhat strigose; upper linear, not ciliate. Fl. spiked. Beak half as long again as seed. Seed ending in 5 lanceolate teeth. **b.** 6–8. *Gravelly, open.* m. and s. Eur.

✓ *β. rigens*, Rchb. Stem-L. elliptico-lanceolate, rigidly ciliate. Vallais. Italy? Rhine.

✓ 2. **prenanthoides.** Smooth. Root-L. oblongo-lanceolate, attenuate, entire or sinuato-dentate. Stem branched, nearly naked. Corymb fastigiate. Seed about as long as beak, ending in a short crenulate crown. **p.** 7, 8. *Gravelly.* s. c. G. Grisons.

Sub-order II. RADIATÆ.

Tribe I. *INULEÆ.*

426. BUPHTHALMUM.

A. *Tube of Florets narrowed downwards. Anthers hardly tailed. Seeds of Ray with three wings. Crest scariose.*

✓ 1. **salicifolium.** L. linear or oblongo-lanceolate. Seeds of the Ray truncate. **p.** 7, 8. *Grassy hills and thickets.* s. G. Sw. s. It.

2. **inuloides.** Lower L. ovate, coarsely dentate. Seeds of the Ray with 2 acuminate horns. **w.** 5, 6. *Calc. rocks.* Tavolora in Sardinia.

B. *Tube of Florets narrowed downwards. Anthers with long tails. Seeds linear, somewhat obcompressed, ribbed, wingless.*

3. **cordifolium.** L. stalked, cordate, doubly calloso-serrate; upper ovate, sessile, simply serrate. **p.** 8. *Hilly.* Boh. Fiume.

4. **speciosissimum.** L. ovali-cordate, serrate, acute, amplexicaul: lower oblongo-ovate, narrowed at base. **p.** 6–8. *Mountain valleys.* s. Alps. s. Tyr.

C. *Tube of Florets of Disc thickening downwards. Anthers with long tails. Seeds somewhat obcompressed, without wings. Crests all coroniform.*

5. **maritimum.** Fl. solitary, at the ends of the branches. L. oblongo-spatulate, villous. ✓ Phyll. spatulate. **w.** *Maritime rocks.*

6. **aquaticum.** Fl. sessile, axillary and terminal. L. oblong, obtuse. **a.** 5. *Moist* ✓ *coasts.*

D. *Tube of Rays with two wings, of Disc with one. Seeds three-edged, somewhat villous. Crest of Rays dimidiate.*

7. **spinosum.** L. obovato- or oblongo-lan- ✓ ceolate. Outer Phyll. spinous, spreading. **a. b.** 5–8. *Coasts.* Mdt.

427. PULICARIA.

A. *Outer Crest setuloso-laciniate.*

1. **vulgaris.** Stem panicled. L. semiamplexicaul, oblong, acute, undulate, villous, nearly entire. Stalks 1-flowered, opposite L. Rays ✓ very short. **a.** 7, 8. *Moist clay, occ. Not in Sicily.*

2. **dentata.** "Woolly, much branched. L. linear, undulate, denticulate: lower obtuse, attenuate into stalk; upper amplexicaul, acute. Stalks 1-flowered. Fl. globose. Rays hardly exceeding phyllaries. **a.** 6–8. *Moist.* Sic."—Guss.

B. *Outer Crest a crenulate crown.*

3. **dysenterica.** Stem panicled, many-flowered. Stem L. aurito-amplexicaul, ovato- ✓ oblong, nearly entire. Stalks 1-flowered, axillary and terminal. **p.** 7, 8. *Moist.*

4. **odora.** Stem few-flowered, nearly simple. L. villous, remotely denticulate. Root-L. stalked, ovate. Stem L. auriculato-amplexicaul. Stalks about 3 together, axillary and terminal. **p.** 4–6. *Coasts.* Mdt.

5. **viscosa.** Viscid. Fl. in a pyramidal raceme, compound at base. L. lanceolate, serrate. **p.** 7, 8. *Coasts* of Mdt.

428. JASONIA.

A. *Seeds villous at base, glandular at top.*

1. **glutinosa.** Fl. discoid. Plant glutinous. L. lineari-lanceolate, quite entire, *often twisted.* Branches leafy to the end. **w. p.** 6, 7. *Open rocks.* Prov. Rous. Sic.

B. *Seeds nearly terete, everywhere villous.*

2. **tuberosa.** Somewhat shrubby. Root præmorse, tuberous, woody. L. linear or somewhat lanceolate, quite entire. Branches with few L. Rays exceeding Phyll. **p.** *Open.* mdt. France.

3. **sicula.** Herbaceous. Root slender. Root-L. lanceolate, dentate. Stem-L. linear, semi-amplexicaul, quite entire. Branches with few L. **a.**? or **p.** 8–10. *Moist sandy coasts.* mdt. Fr. Sic. *Outer Flts. sometimes very short or tubular.*

429. INULA.

In most species of this genus the outer phyllaries are of a different form and substance from the inner, and, except in the last section, are composed of two parts—a thick and firm scale, with a leafy termination. The extreme outer ones sometimes have this leafy part much enlarged, and uniting with small L. at the top of the flower-stalk: they form an involucrum on the outside of the common calyx.

A. Inner Phyllaries obtuse; outer leafy. Sp. 1.

B. Inner Phyllaries acute; outer with leafy appendage.

- **i.** Rays shorter than tubular Florets. Sp. 2, 3.
- **ii.** Rays exceeding tubular Florets.
  - **a.** Seeds not hairy.
    - * Outer Phyllaries woolly or tomentose. Sp. 4–8.
    - ** Outer Phyllaries smooth. Sp. 9–12.
    - *** Outer Phyllaries with strong bulbous hairs. Sp. 13, 14.
  - **b.** Seeds hairy. Sp. 15–18.

C. Outer Phyllaries not of two parts. Sp. 19, 20.

A. *Inner Phyllaries spatulate, obtuse; outer leafy.*

1. **Helenium.** L. dentate, velvety beneath. Stem-L. cordate, acuminate. Seeds hairless, 4-edged. **p.** 7, 8. *Moist meadows and banks.* n. Eur. *occ.*

B. *Inner Phyllaries finely acute; outer a scale with a leafy appendage.*

i. *Rays shorter than calyx.*

2. **Conyza.** Rays deeply divided on one side, hardly ligulate. Phyll. hairy. Appendage very short, glandular, somewhat squarrose. Stem panicled. L. attenuate into haft, which is somewhat dilated at base, but not amplexicaul nor decurrent; hairy on both sides. Seeds hairy. **p.** 6, 7. *Dry, chiefly calc.*

3. **bifrons.** Rays few, ligulate. Phyll. glandular. Stem panicled. L. dilated at base, cordate, and somewhat decurrent, glandular on both sides. Seeds smooth. **b.** 7, 8. *Moist shady.* s. Fr. It.

ii. *Rays exceeding calyx.*

a. *Seeds hairless.*

* *Outer Phyllaries woolly or tomentose.*

4. **germanica.** Phyll. woolly at the back. Corymb compound, crowded. L. oblongo-lanceolate, hairy on surface and rough on margin. Stem-L. cordate at base. **p.** 7, 8. *Stony.* Sax. Palat. Aust. Boh.

5. **media.** Cal. somewhat ventricose. Phyll. nearly smooth, ciliate. Corymb nearly simple, crowded. L. lanceolate, hairy on surface and rough on margin. Stem-L. cordate at base. **p.** 7, 8. *Hill meadows.* Between Kreuznach and Bingen. Palat.—Koch.

6. **hybrida.** "Outer Phyll. somewhat villous on back and margin, with 1 to 3 lanceolate, 3-nerved bracts. Corymb crowded, about 5-flowered. L. narrow lanceolate, acute, remotely and obscurely denticulate, venoso-nervose, rough and somewhat woolly on margin, otherwise hairless. *Perhaps a hybrid between* germanica *and* ensifolia. **p.** 7, 8. On the Kahlenberg near Vienna."—Koch.

7. **ensifolia.** Appendage ovato-lanceolate, 3–5 nerved: lower longer, and passing into a leafy involucrum. Base of Cal. and top of stalk woolly. Fl. few, somewhat corymbose. L. narrow lanceolato-linear, nerved, ciliato-scabrous. Surface not hairy. **p.** 7, 8. *Rocky hills.* It. s. e. G.

8. **Vaillantii.** Appendage somewhat squarrose, woolly at back. Fl. corymbose. Cal. and top of Stalks woolly. L. lanceolate, hairy, narrow at base. **p.** 8, 9. *Moist thickets and mountain meadows.* w. Alps.

** *Outer Phyllaries smooth.*

9. **spiræifolia.** "Rough, with hairs. Stem simple, with crowded corymb at top. L. sessile, oblong, cartilagineo-denticulate and muricate, rigid, reticulate. Phyll. ovate, obtuse, squarrose, hairless. **p.** Pdm. Carniola. adr. G."—DC. *Query if a var. of* I. hybrida *of Koch.*

10. **squarrosa.** Phyll. ciliate, otherwise hairless. Appendages ovate, nervoso-venose, short, squarrose. Cal. sometimes involucrate. Fl. corymbose. L. elliptico-oblong. **p.** 7, 8. *Stony woods.* s. Eur. ✓

11. **salicina.** Phyll. ciliate; outer otherwise smooth. Appendage ovato-subulate, 1-nerved. Cal. sometimes involucrate. Fl. few, somewhat corymbose. L. oblongo-lanceolate, dilated at base, cordate and amplexicaul, hairless on surface. **p.** 6, 7. *Thickets and rough pastures.* s. and m. Eur. ✓

12. **semiamplexicaulis.** "Stem somewhat villous, corymbose at top. L. semiamplexicaul, oblongo-lanceolate, acute, calloso-serrate, hairless above, pubescent beneath. Outer Phyll. oblongo-lanceolate, spreading, leafy: inner linear, hairless. Rays twice as long as calyx. Seeds hairless. *Perhaps a hybrid between* salicina *and* Vaillantii. **p.** Cuneo in Pdm. La Batie near Geneva."—DC.

*** *Outer Phyllaries with strong bulbous hairs.*

13. **hirta.** Appendage ovate or oblongo-lanceolate, veiny, with bulbose hairs, erect, equalling inner phyllaries. Stem nearly simple. Fl. solitary or rarely somewhat corymbose. L. elliptic, sometimes enlarged and rounded at base, sessile, hairy. **p.** 5, 6. *Rough grassy hills.* m. and s. Eur. *occ.* ✓

14. **helenoides.** Appendage narrowly ovato-lanceolate, with bulbous hairs, erect, exceeding inner phyllaries, and passing into a leafy involucrum. Fl. solitary or somewhat corymbose. L. elliptic, hairy, sessile. (Recept. setulose in the middle, DC.) **p.** 8, 9. *Rough.* Pyr. Gen.

b. *Seeds hairy.*

15. **suaveolens.** Phyll. hairy. Appendage ovate, acute, nerveless, rough with glands, somewhat squarrose. Stem corymbose. L. elliptic, hairy and glandular: lower attenuate into a long stalk. **p.** 9. Monfalcone. It. *Not recently found. Var. of* I. Conyza?

16. **Oculus-Christi.** Phyll. lanceolate: the outer gradually shorter, villous. Stem woolly, 2–5-flowered. L. oblong, somewhat obtuse, woolly: lower attenuate into stalk; upper cordato-amplexicaul at base. **p.** 6, 7. *Open barren.* s. e. G. ✓

17. **britannica.** Phyll. woolly: outer equalling or exceeding inner, acute. Stem woolly, somewhat corymbose. L. oblong, acute, dilated and cordato-amplexicaul at base, villous. **p.** 7, 8. *Meadows and moist banks.* m. and s. Eur. ✓

18. **montana.** Phyll. villous: outer shorter than inner, hardly as long as scale, nearly erect, nerveless. Stem nearly simple. Fl. solitary. Root-L. spatulate. Stem-L. few and small, oblongo-lanceolate, somewhat amplexicaul. **p.** 7, 8. *Barren open.* s. Eur. ✓

C. *Outer Phyllaries acute, not composed of two parts. Seed villous.*

19. **crithmoides.** Shrubby, quite smooth. Stem corymbose. L. linear, fleshy, blunt, entire or with three terminal teeth. **w. p.** 7–9. *Maritime rocks and salt marshes.* ✓

20. **graveolens.** Viscido-pilose. Stem branched and flowery from base. L. linear, sessile, glandular. Inner Phyll. scariose, with green midrib. **a.** 8, 9. *Moist gravel.* It. Istr. s. Fr. ✓

Inula provincialis of Linn. *is not known.*

Tribe II. *ASTERINEÆ.*

430. SOLIDAGO.

1. **Virga-aurea.** Pan. or Rac. erect. L. of Stem lanceolate, serrate. Lower L. elliptic, stalked. Phyll. linear, acute. Rays about 8. Seeds downy. **p.** ✓

α. Stem flexuose, branched, pubescent. Branches of Pan. many-flowered. Cal. nearly smooth. *Very common.*

β. *ericetorum.* Lower L. lanceolate; upper lineari-lanceolate, nearly entire. Fl. small, racemose. *Sandy.*

γ. *alpestris.* Stem and L. hairless. Rac. erect, crowded. Cal. nearly smooth. *Hilly.*

δ. *cambrica.* Stem simple, pubescent at top. L. long lanceolate, cuneate at base, hairy on the nerves. Rac. crowded. *Hilly.*

ε. *minuta.* Stem simple, smooth. L. long lanceolate. Branches of Rac. 1-flowered, two or three inches high. *Mountains.*

ζ. *littoralis.* Velvety. Stem simple. L.

obovato-lanceolate, nearly entire. Rac. crowded, oblong. Fl. rather large. *Shore of Tusc.*

η. *reticulata.* Stem pubescent, branched. L. oblongo-lanceolate, entire, rugose, ciliate, reticulato-venose beneath. e. Pyr.

θ. *nudiflora.* Hairless. L. elliptic, acuminate, attenuate: the uppermost entire. Stalks naked, 1–2-flowered. Monte Taluno, Cors.

431. LINOSYRIS.

✓ 1. **vulgaris.** L. linear, hairless, without dots. Fl. corymbose. Phyll. with appendages, squarrose. **p.** *Open rocky.* m. and s. Eur.

432. ASTER.

[Arrangement from De Candolle.]

A. *All the Phyllaries herbaceous, nearly equal.*

✓ 1. **alpinus.** Stem 1-flowered. L. very entire. Root-L. spatulato-oblong. Stem-L. lanceolate. Phyll. lax, oblong. Seeds hirsute. **p.** 7–9. *Mountain pastures.* Alps. Pyr.

β. *brachyglossus.* Lower L. linear; even the root-L. are hardly spatulate. Rays not exceeding disc. *Snowy.* Mont Fluve in the Vallais.

2. **pyrenæus.** Somewhat corymbose. Branches 1-flowered, leafy. L. semiamplexicaul, lanceolate, acuminate, remotely serrate at top, hispid on both sides. Phyll. lax, lineari-lanceolate, finely acute. **p.** 7–9. *Mountains.* Esquierri in Pyr.

B. *Phyllaries ciliate, squarrose: outer herbaceous; inner membranous and coloured, at least at the top. Flowers somewhat corymbose.*

✓ 3. **Amellus.** Stem few-flowered. L. oblongo-lanceolate, acute, somewhat serrate, somewhat 3-nerved, pubescenti-scabrous. Phyll. in 4 or 5 rows, short and obtuse, spreading. **p.** 8–10. *Open hills.* s. and m. Eur.

β. *Pseudo-amellus.* Covered with spreading hairs. Lower L. obovate, attenuate. Phyll. obtuse, ciliate.

C. *All Phyllaries membranous on margin, especially towards the base.*

i. *Root-L. attenuate. Stem-L. somewhat expanded at the base and semiamplexicaul.*

✓ 4. **brumalis.** Stem racemose. Branches usually 1-flowered. L. lanceolate, acuminate, amplexicaul, rough on margin: lower serrate in the middle. Phyll. lax, nearly equal: lower spreading from base. **p.** 10, 11. *Escapes on banks of streams in a sandy soil.* Ger.

5. **Novi-Belgii.** Corymb decompound. Branches rigid. L. lanceolate, somewhat amplexicaul, acute, rough on the margin. Lower L. serrate in the middle. Phyll. lax, nearly equal: lower spreading from base; innermost acuminate. **p.** 9, 10. *Escapes on banks of streams in a sandy soil.* Fr. G. ✓

6. **salignus.** Stem panicled. Branches rod-like, corymbose at top. L. lanceolate, attenuate, serrate in the middle, rough on margin: upper semiamplexicaul; those of the branches few, linear, erect. Phyll. closely tiled, spreading only at the tips. **p.** *Banks of rivers.* Strasb. Als. G. ✓

ii. *Stem-L. oblongo-lanceolate, linear or subulate: those on the branches very small.*

7. **leucanthemus.** "Stem panicled. Branches racemose. Stem-L. sessile, long lineari-lanceolate, acuminate, rough towards the margin, entire, or with 1–3 small, remote serratures in the middle. L. of Fl.-stalks linear, spreading. Phyll. adpressed, but somewhat spreading at the tip. **p.** 8, 9. *Naturalized on the* Spree near Berlin."—Koch. ✓

8. **parviflorus.** "Stem panicled. Secondary branches racemose. Stem-L. sessile, lanceolate, acuminate, remotely serrulate, rough towards the margin. Phyll. adpressed, but spreading at the tip. **p.** 8, 9. *Occasionally naturalized on the* Rhine, Maine, and Elbe."—Koch. *De Candolle describes the inflorescence of these two American species in the same terms. He says the stem of the first is marked with lines of hairs, and describes that of the latter as pubescent.* ✓

D. *Phyllaries in two rows, obtuse, striate: inner membranous.*

9. **Tripolium.** Stems smooth. L. somewhat fleshy, lineari-lanceolate or lanceolate. Root-L. broader, 3-nerved, obtuse, attenuate. Branches corymbose. All Phyll. obtuse; inner large, smooth. **p.** 8, 9. *Salt marshes. The rays are frequently wanting.* ✓

433. GALATELLA.

A. *L. with dots.*

1. **punctata.** Rough. Stem erect, terete, somewhat corymbose. L. linear, acute, or lineari-lanceolate; 3-nerved; upper 1-nerved. L. of ✓

branches small, lineari-subulate. Cal. obconical. Phyll. lanceolate, acute, shorter than disc. **p.** 9. m. and s. Eur.

✓ 2. **cana.** Canescent with soft hairs. Stem corymbose. L. lanceolato-oblong, mucronate, quite entire, 3-nerved. Phyll. in 4 rows, ovato-lanceolate, acute, scarcely membranous on the margin. Rays twice as long as disc. **p.** 8, 9. *Boggy thickets.* Moravia.

B. *L. without dots.*

3. **rigida.** Stem erect, somewhat striate, corymbose. L. lanceolato-linear, mucronato-acute, quite entire, 3-nerved. Rays exceeding disc. **p.** 10. *Vineyards.* Meldas. Provence. Languedoc.

434. STENACTIS.

✓ 1. **annua.** Stem erect, corymbose. Lower L. ovate; upper lanceolate, dentato-serrate, somewhat hairy. Phyll. bristly. **a.** 7, 8. (**p.** Koch.) n. It. Rhine, &c.

435. BELLIDIASTRUM.

✓ 1. **Michelii.** L. spatulate. Scape naked. **p.** 6, 7. *Woody mountains.* m. Eur.

436. BELLIUM.

1. **bellidioides.** Stoloniferous. Root-L. spatulate, entire, very attenuate. Scape 2 or 3 times as long as L. **a.** *Moist sea-rocks.* Corsica. Sardinia.

2. **nivale.** Not stoloniferous. Root-L. spatulate, entire, somewhat attenuate. Scape villous at top, hardly exceeding L. **a.** ? *High mountains.* Cors. Sard.

3. **crassifolium.** Not stoloniferous. Stem short, much divided, somewhat ascending. L. fleshy, quite entire, obovate, attenuate into a long stalk, somewhat pubescent. Fl.-stalk 3 or 4 times as long as L. **p.** *Sea-rocks.* St. Elia, St. Peter, Cala Vinagra, all in Sard.

437. BELLIS.

A. *Annual, caulescent.*

1. **dentata.** Stem branched at base, diffuse, somewhat hispid. L. obovate, coarsely dentate, cuneate at base. Phyll. hardly acute. All the Flts. bearded at the base. **a.** *Moist.* Pisa. Ver. Nap. Sic.

✓ 2. **annua.** Stem diffuse, somewhat hispid. L. somewhat dentate, attenuate. Flts. hairless at base. **a.** 4–6. *Dry meadows.* Coasts of Mdt.

B. *Perennial, hardly caulescent.*

✓ 3. **perennis.** L. spatulato-obovate, crenato-dentate, pubescent, veined. **p.** 3–9. *Meadows, &c.*

✓ 4. **sylvestris.** L. obovate, crenate, 3-nerved. **p.** 9–5. *Open fields.* Prov. It. *Flowers in autumn and winter, and is much larger than the common Daisy.*

438. ERIGERON.

✓ 1. **canadensis.** Stem panicled. L. lineari-lanceolate, ciliate. Rays inconspicuous, not exceeding disc. Seed oblong, hairy. **a.** 7, 8. *Sandy. Escapes.*

✓ 2. **acris.** Somewhat hirsute. Stem erect, leafy, racemose. Stalks 1–3-flowered. L. oblong, quite entire: lower attenuate; upper sessile. Crest twice as long as seed. Rays erect, exceeding disc. Inner fertile Flts. tubular, filiform. **b.** or **p.** 7, 8. *Dry.*

β. drœbachensis. L. narrower, hairy only on margin.

3. **Villarsii.** Stem erect, somewhat viscid, 2–3-flowered or somewhat panicled. L. lanceolate, 3-nerved, quite entire, rough, sessile. Cal. and Stalks glanduloso-pubescent. Rays spreading, twice as long as disc. Inner fertile Flts. numerous, filiform, tubular. **p.** *Mountains.* w. Alps.

✓ 4. **alpinus.** Stems tufted, hairy, 1- or few-flowered. L. lanceolate, somewhat acute, villous or ciliate, quite entire. Phyll. subulate at top. Rays spreading, twice as long as disc. Inner fertile Flts. numerous, filiform, tubular. Crest hardly longer than seed. **p.** 7, 8. *Mountain pastures.* Alps, &c.

β. grandiflorus. Fl. twice as large.

✓ 5. **uniflorus.** 1-flowered. Cal. very woolly. Rays spreading, twice as long as disc. All the female Fl. ligulate. L. lanceolate, hirsute: lower smoother, attenuate into a stalk. **p.** 7, 8. *Very high grassy.* Alps.

✓ 6. **glabratus.** 1–3-flowered. Cal. pubescenti-hirtous. Rays spreading, twice as long as disc. All female Flts. ligulate. L. lanceolate, smooth or somewhat hairy: lower attenuate into stalk. **p.** 7, 8. *Mountains.* Alps.

HELIANTHUS.

Two species of *Helianthus* are found in field cultivation in Germany: *H. annuus*, the common sunflower, which is cultivated for the oil obtained from the seeds, and *H. tuberosus*, the Jerusalem artichoke.

Tribe III. *GALINSOGEÆ.*

439. BIDENS.

1. **bipinnata.** Seeds linear, smooth, twice as long as calyx. L. bipinnate. Lts. incise. **a.** 7–9. *Margins.* s. Tyr. Mtp.

2. **tripartita.** Seeds obovate, with backward prickles. Bristles 2 or 3. Outer L. tripartite: divisions lanceolate, serrate. **a.** 7–9. *Wet.*

3. **cernua.** Seeds cuneate, with 4 bristles armed with backward prickles. L. undivided, lanceolate, serrate, somewhat connate. **a.** 8, 9. *Wet.*

β. Fl. radiate. *Coreopsis Bidens*, LINN.

4. **bullata.** Seeds obovate, with forward prickles at base and backward at top. Bristles 2. L. broad ovate, coarsely toothed, rough, sometimes with two small lateral lobes. **a.** 8, 9. *Wet.* Padua. Vercelli.

440. GALINSOGA.

1. **parviflora.** Nearly smooth. Recept. conical. Pales of Crest 8–16. **p.** 7, 8. *Sandy cult.* Carlsruhe. n. G. *occ.*

Tribe IV. *ANTHEMIDEÆ.*

441. ANTHEMIS.

I have been unable to do better than to follow De Candolle in this genus, though much dissatisfied with his characters, and unable from them to make an analysis of the genus. His divisions are—

A. Seeds quite bald.
  i. Rays white. Sp. 1–6.
  ii. Rays very short. Sp. 7.
B. Seeds with a short crown. Sp. 8–22.

To which I add—

C. Rays neuter. Tube of Florets winged, but without any spur. (*Maruta* and *Lyonettia*, DC.) Sp. 23–25.
D. Rays barren. Tube with a spur at the base. (*Orminis*, DC.) Sp. 26.
E. Florets of the Disc white! Sp. 27.

Koch mentions a narrow wing to the seeds of many species where it is not noticed by DC. I have added his distinguishing characters of the species of the *Fl. Ger.*

The following aberrations from the character of the divisions of DC. occur in the species. The seeds of *A. Chamomilla* are "*vix ac ne vix coronata*," DC. In *A. incrassata* the callous margin seems to correspond with the wing of Koch. The sides of the seed are continued, to form an acute-edged cup, J. W. In Sp. 5, the seed is crowned with a very short-toothed margin, DC. In Sp. 8, the seed is not crowned, SPRENGEL. In Sp. 10, the crown is dimidiate or sometimes wanting, DC. In Sp. 11, the seeds are "*ferè truncata*," DC. In Sp. 14, they are "*vix ac ne vix submarginata, potius omnino calva*," DC. In Sp. 3, 5, 6, 19, 23, and 25, the receptacle is a prolonged cone: in the other species it is convex, or at most hemispherical.

A. *Seeds quite bald.*

i. *Rays white.*

1. **Chamomilla.** Stem much divided and shrubby at base. Flowering-branches villous, 1-flowered, somewhat exceeding L. Lowermost L. stalked, pinnate. Div. pinnatifid. Segments acute, with 3–5 lobes. Upper L. pinnatifid; uppermost undivided. Phyll. pubescent at back, membranous on margin. Recept. convex. Chaff acuminate. Rays often neutral. **p.** *Fields.* Naples, *abundant.*

2. **incrassata.** Stem branched, spreading. L. pinnatifid. Lower Lobes entire, acute; upper longer, pinnatifid. Stalks at length thicker at the top. Chaff acuminate, almost longer than florets. Seeds 4-edged, furrowed: summit umbilicate: margin callous. **a.** 7. *Shores of* Mdt.

3. **clavata.** "Downy, perennial. L. bipinnatifid. Segments short, flat, somewhat squarrose, with a callous point. Fl.-stalks long, naked, club-shaped, hollow at top. Recept. conical. Chaff lanceolate, mucronate, persistent. Seeds obtusely 4-edged, smooth, whitish, crowned with a thin, crenulate margin. **p.** 8–10. *Mountain pastures.* Madonie."—GUSS.

4. **sphacelata.** Stem herbaceous, ascending. Fl.-stalks long, not thickened at top. L. bipinnatifid: lobes linear, acute, entire, without dots. Phyll. with a dark margin: outer

somewhat acute; the innermost obtuse. Recept. hardly conical. Chaff scariose, narrow, acuminate, easily separating. **a. b.** 5, 6. *Open hills.* Nebr. Ætna.

✓ 5. **arvensis.** Pubescent. Stems somewhat diffuse. L. pinnatipartite: lobes lineari-lanceolate, approximate, furnished with very acute teeth. Branches 1-flowered. Phyll. scariose on margin, white, obtuse. Recept. an elongated cone. Chaff lanceolate, acuminate into a rigid mucro. Seeds obtusely 4-edged: the outer with a swelling ring at top; the inner with an acute margin, Koch. **a.** 5, 6. *Fields.*

✓ 6. **nobilis.** Pubescent. L. sessile, pinnate: divisions much separated into lineari-setaceous lobes. Flowering-branches 1-flowered. Phyll. obtuse. Margin hyaline. Chaff oblong, scariose at top and on margin, pointless, somewhat shorter than florets. Recept. an elongated cone. **p.** 7, 8. *Dry fields and pastures. Hardly native in* G. or Sw.

ii. *Rays very short, not exceeding style.*

✓ 7. **aurea.** Hoary. Stem ascending, pubescent, branched. Branches naked above, 1-flowered. L. bipinnate, dotted. Lobes linear, somewhat acute. Phyll. obtuse. Margin hyaline. **p.** s. Europe. *Anacyclus aureus* of Linn. *Perhaps var. of Sp.* 5.

B. *Seeds with a short crown.*

8. **ætnensis.** Stems somewhat tufted, ascending, leafy at base, naked for a long way at top, 1-flowered. L. somewhat villous, rather fleshy, attenuate, bipinnatipartite. Lobes oblong, short, quite entire. Phyll. with a brown, scariose margin. Recept. convex. Chaff small, oblong, acute. Margin brown, scariose. Tube of Flt. with a broad wing. Seed 4-edged, with a membranous crown. **p.** 7, 8. *Volcanic sand.* Top of Ætna. Monte Cammerata.

9. **petræa.** Quite hairless, somewhat shrubby at base, tufted, ascending, naked for a long way at top. L. fleshy: lowermost stalked, bipinnatipartite; upper pinnatipartite. Lobules oblong: lower obtuse; upper acute. Phyll. lanceolate, acute. Margin black. Chaff hyaline, oblong, obtuse, ending in a brown bristle. **p.** *Gravel.* Abruzzi. *Very close to* A. montanum.

10. **montana.** Pubescence adpressed. Stem somewhat shrubby at base, ascending, naked for a long way at top, 1-flowered. L. stalked (hairless, Koch), pinnatipartite. Lobes linear, trifid or undivided. Outer Phyll. lanceolate, with a brown margin; inner scariose at top, obtuse. Chaff lanceolate, sphacelate, membranous, tridentate: the middle tooth rigid and longer (lineari-oblong, sphacelate, and lacero-dentate, Koch). *Seeds sometimes bald.* **p.** 8, 9. *Stony mountains.* Pyr. s. Alps. Apenn. Sic.

β. Rays wanting. Calabria.

✓ 11. **maritima.** Stems diffuse, branched. L. fleshy, dotted, smooth, pinnatipartite. Lobes cuneate or lanceolate, with a few teeth at top. Phyll. adpressed, somewhat membranous on margin. Chaff lanceolate (oblong, laciniate at tip, with excurrent nerve, J. W.), equalling flowers. **p.** 4–6. *Sandy shores.* Mdt.

12. **erucifolia.** Stems somewhat shrubby, erect, branched, hairless. L. fleshy, oblong: lower pinnatipartite, with trifid segments; upper inciso-dentate. Stalks long, nearly naked. Phyll. smooth. Chaff lanceolate, acute. **s.S.** 6, 7. *Fields.* Sic.

13. **chia.** Stem herbaceous, erect, somewhat hairy, leafy at base, naked at top, 1-flowered. L.-stalk smooth, pinnatipartite. Lobes incise or pinnatifid. Lobules mucronate, the stalk semisheathing at base and furnished with several very acute teeth. Phyll. oblong, somewhat obtuse, brown on the margin. Recept. hemispherical. Chaff hyaline; that of the margin brownish; of the middle pale. Crown of the Rays one-sided; of the Disc complete. **a.** Calabria. *This is the* Anthemis *of Dioscorides.*

14. **peregrina.** Hoary. Stem ascending. Branches 1-flowered. L. stalked, pinnatipartite. Segm. few, divided into 3–5 oblongo-linear, somewhat obtuse lobes. Uppermost L. simple, pinnatifid. Phyll. hirsute, hardly acute (finely acuminate, J. W.), lanceolate. Margin hyaline. Chaff scariose, rigid, lanceolate, acuminate, with a brown nerve equalling florets. **a.** 5, 6. *Fields.* Sic. Cal.

15. **secundiramea.** Stem diffuse. Branches ascending, shortly naked at top, pubescent, at last thickened, 1-flowered. L. rather fleshy, somewhat dotted, hairless, pinnatipartite. L. subincise or nearly entire. Phyll. with a whitish margin. Recept. conical. Chaff oblong, hardly acute. Margin hyaline, somewhat shorter than tube of corolla. **a.** 5, 6. *Sea-shore.* Catania. Sard. *rare.*

β. Chaff obovate, somewhat denticulate. Malta.

✓ 16. **altissima.** Smooth. Stem erect, branched. Branches shortly naked at top, 1-flowered. L. bipinnatipartite. Lobes lanceolate, sparingly dentate. Teeth and Lobules mucronato-cuspidate, generally reflexed. Phyll. ovali-lanceolate, acute. Recept. hemispherical. Chaff broad at the base, produced abruptly into a rigid point, exceeding florets. (Seeds with a narrow wing, Koch.) **a.** 7, 8. *Fields.* s. Eur.

17. **Cota.** "L. bipinnatifid. Rachis somewhat dentate. Div. trifid or pinnato-5-fid. Segm. with a short mucro. Recept. hemispherical. Chaff oblong, acuminate into a rigid mucro, shorter than the florets. Seeds without a wing ending in an acute margin. **a.** 6, 7. *Vineyards.* Ist. Fiume."—Koch.

18. **anglica.** "Stem prostrate, hoary. L. bipinnatifid, acute, fleshy, dotted on upper surface. Outer Phyll. acute; inner longer, torn, and almost feathery. Recept. convex. Chaff prominent. **a.** 7. *Rocky coast.* Sunderland." —Sm. *The dots on the L. are not represented in the figure in 'Eng. Bot.,' nor does the chaff there appear to be prominent. These dots, and the lanceolate, acute, and not awned chaff, seem to distinguish this from both* Cota *and* altissima. *The figure also suggests the idea of winged seed.*

19. **ruthenica.** "Woolly. L. bipinnatifid. Segm. lineari-lanceolate, entire or with 2 or 3 acute, mucronate teeth. Recept. cylindrical. Chaff lanceolate, somewhat obtuse and toothed, and acuminate into a rigid mucro. Seeds obtusely 4-edged, equally furrowed, terminated by an acute margin: outer often with a short, obliquely truncate crown. **a.** 7, 8. *Open barren.* Boh. s. Istr."—Koch.

20. **tinctoria.** Stem erect, branched. L. pinnatipartite, hoary beneath. Lobes linear: these and the Rachis acutely dentate. Branches ✓ 1-flowered. Phyll. hoary, obtuse. Margin somewhat membranous. Recept. convex. Chaff somewhat abruptly contracted to a point, as long as floret. Rays *usually yellow*, equal semidiameter of disc. Seeds compressed, with a narrow wing and ending in an acute margin. **p.** or **b.** 7, 8. *Dry fields.* m. and s. Eur.

β. Discoid. At Cuneo in Pdm.

21. **Triumfetti.** "L. pubescent, bipinnatifid. Rachis toothed. Segments pectinately disposed, somewhat serrate. Serratures mucronate. Recept. nearly hemispherical. Chaff lanceolate, acuminate into a rigid mucro. Seeds 4-edged, with narrow wing, ending in an acute margin. **p.** 7, 8. *Warm hills.* Tess. Ist." —Koch.

22. **austriaca.** Stem erect, branched, hoary at top. L. pectinato-pinnatipartite, hoary. Rachis toothed. Segm. dentate, very acute (quite entire, Koch). Phyll. villous on the back, hyaline on margin, obtuse. Recept. convex. Chaff lanceolate, narrowed into a rigid point, as long as florets. (Seeds compressed, with narrow wing, and ending in an acute margin.—Koch.) **p.** 7, 8. *Fields.* Ratisbon. lower Austria. Istria.

C. *Rays (if any) neuter. Tube of Floret winged, without a spur.* Maruta, DC.

23. **Cotula.** Nearly smooth. Phyll. whitish on the margin. Recept. conical. Chaff narrow, acuminate. **a.** 5, 6. *Fields and uncult.* ✓

24. **fuscata.** Smooth. Phyll. oblong, obtuse, with a brown scariose margin. Recept. convex, chaffy. **a.** 2–6. *Moist.* Prov. Nice. Rome. Sard. Sic. ✓

25. **abrotanifolia.** "L. villous, pinnatipartite, on short stalks. Segm. few, linear, undivided or toothed at top. Branches incurved, leafless at top. Seeds striate, smooth." —DC. "Phyll. scariose at top. Chaff acute, deciduous. **a.** 4, 5. *Sandy hills.* Sic."—Guss. muricata

D. *Rays seedless. Corolla somewhat spurred.* Ormenis, DC.

26. **mixta.** L. pinnatifid, with a broad rachis. Segm. short. Recept. conical. Chaff keeled, acute. Tube of Flts. with one wing. Seed nearly terete and without crown. **a.** 6, 7. *Sandy fields.* It. s. Fr. ✓

E. *Florets of Disc white!*

27. **alpina.** Lower stem-L. with 10 or 12 pair of simple, or bi- or trifid Lts. Segm. linear, acuminate. Chaff lacero-dentate, and sphacelate at top. **p.** 7, 8. *Very high.* s. e. Alps.

442. ANACYCLUS.

A. *Florets of Disc regular.*

1. **officinalis.** "Stem usually 1-flowered, ascending. Chaff ovate, attenuate. Wings of the Seeds opaque and cartilaginous. **a.** 5, 6. s. Eur."—Koch.

B. *Florets of Disc with two longer erect teeth.*

2. **clavatus.** L. bipinnatipartite. Lobes lineari-subulate. Fl.-stalks thickened at top. ✓ Rays few, oblong, white. **a.** 4–6. *Fields.* mdt. Fr. Sic. *Pastures and waysides.* Sard.

✓ 3. **tomentosus.** L. bipinnatipartite. Lobes lineari-subulate. Fl.-stalks cylindrical. Rays oblong, white. **a.** 9, 10. *Sandy fields.* s. Fr. Italy.

✓ 4. **radiatus.** L. bipinnatipartite. Lobes lineari-subulate (erect. Teeth of Flts. awned, Guss.). Rays oblong, *yellow on both sides.* **a.** 5, 6. *Fields.* s. Fr. It.

β. *purpurascens.* Rays externally purplish.

5. **pallescens.** Lower L. pubescent, bipinnatifid; upper nearly smooth, pinnatifid. Segm. of all lineari-lanceolate and somewhat incise. Fl.-stalks long, erect. Teeth of Flts. not awned. Chaff cuneiform, mucronate, quite smooth. **a.** 6, 7. *Grassy shores.* Cefalu.

✓ 6. **valentinus.** L. villous, bipinnatipartite. Lobes linear. Rays very small and inconspicuous. **a.** 6, 7. *Fields.* s. Fr.

443. ACHILLEA.

A. Rays about 10. Ligules (*i.e.*, the expanded part of the radiant florets) as long as the calyx.
  i. Flowers in a corymb.
    a. L. undivided. Sp. 1–5.
    b. L. pinnatifid, but not with a distinct linear inline. Sp. 6–10.
    c. L. pinnatifid, with a linear inline. Sp. 11–16.
  ii. Stem 1-flowered. Sp. 16, 17.

B. Rays about 5. Ligules about half as long as calyx.
  i. Flowers not yellow.
    a. L. pinnate or pinnatifid, with linear inline.
      * Rachis entire. Sp. 18–23.
      ** Rachis toothed. Sp. 24, 25.
    b. L. pinnatifid, without linear inline. Sp. 26, 27.
  ii. Flowers yellow. Sp. 28.

A. *Rays about* 10. *Ligule* (i.e., *expanded part of floret*) *as long as calyx, white.* Ptarmica, DC. *Seeds often somewhat winged.*

i. *Flowers in a corymb.*

a. *L. undivided.*

✓ 1. **Herba-rota.** L. sessile, narrow cuneate, generally with a few simple serratures at top. Corymb simple, few-flowered. Cal. ovate. Chaff smooth. **p.** 7, 8. *High pastures.* Dau. Piedmont.

2. **cristata.** Stem much branched. L. linear, flat, acuminate, dentate. Teeth emarginate and ciliato-serrate. Corymb simple. Cal. nearly globose. **p.** It.?

✓ 3. **Ptarmica.** Stem erect. L. hairless, lineari- or oblongo-lanceolate, sharply, closely, and equally serrate. Corymb panicled. Cal. nearly hemispherical. Chaff downy. **p.** 7, 8. *Moist meadows and pastures.*

β. *pubescens.* Stem and L. pubescent, short.

γ. *linearis.* L. narrow linear.

4. **decolorans.** Erect, hairy. L. lanceolate, acutely duplicato-serrate. Corymb compound. Cal. hemispherical. Rays about 6, yellowish. Ligules hardly as long as calyx. **p.** 8, 9. Matlock. Temple Cloud, Somerset.

5. **serrata.** Stems simple, ascending, velvety. L. tomentose, lineari-lanceolate, pinnatifid. Lobes oblong, obtuse. Corymb somewhat compound. Cal. campanulate. Chaff oblong, somewhat hairy, rufous at top. Alps? *Not now found.*

b. *L. pinnatifid or pectinate, but not with a clear linear inline or rachis.*

6. **alpina.** Smooth. Stem erect, branched. L. lanceolate, acuminate, serrato-pinnatifid. Lobes acute, serrate. Corymb compound. Cal. somewhat campanulate. Chaff dentate, rufous at top. **p.** 6, 7. Pyr. Savoy. St. Gothard.

✓ 7. **macrophylla.** Stem nearly smooth, erect, terete, simple. L. pinnatipartite: outline elliptic. Lobes approximate, lanceolate, incise, and unequally serrate: upper confluent. Corymb compound. Chaff ovate, dark green on the tip. **p.** 7, 8. Alps, *not rare.*

8. **valesiaca.** Somewhat hirsute. L. pinnatipartite. Rachis with a broad and nearly entire wing. Lobes 5–10 on each side, approximate, cuneato-lanceolate, inciso-dentate. Corymb somewhat compound. Chaff broad at top, erose, rufous. **p.** 7, 8. At source of Rhone.

9. **thomasiana.** Stem erect, pubescenti-villous. L. nearly smooth, pinnatipartite. Rachis quite entire. Lobes distant, cuneate, ending in 2 or 3 mucronate teeth. Root-L. bipinnatifid. Corymb simple. Chaff brown at the tips. **p.** 7, 8. Monte Bovonnaz in upper Vallais.

✓ 10. **Clavennæ.** Hoary. Hairs adpressed. Stems erect, simple. Root-L. stalked, pinnatifid: outline obovato-cuneate. Segm. oblong, obtuse. Stem-L. sessile, divided from base.

Corymb somewhat umbellate. Chaff dentate, bifid. **p.** 7, 8. *Very high.* Aust. Carn. Monte Generoso. Chiavenna.

β. denudata. Altogether hairless.

c. *L. pinnate or pinnatifid, with a narrow, linear inline.*

11. **moschata.** Stem nearly smooth, erect, simple. L. hairless, pectinato-pinnatifid, dotted. Lobes linear, nearly entire, somewhat obtuse. Corymb simple, umbel-like. Chaff hyaline. **p.** 7, 8. *Very high, wet.* Alps, *not rare.*

β. impunctata. L. without dots. Carinth.

12. **hybrida.** "L. woolly: outline oblong, pectinato-pinnate. Lts. lineari-lanceolate, mucronate, entire or with few teeth. Corymb simple. **p.** 7, 8. *Very high.* Alps of Vallais."—Koch.

13. **nana.** Very woolly. Stems many, simple, suberect. Lts. nearly equal, lineari-lanceolate, acute, sometimes incise, approximate. Cal. scantily woolly. Chaff lanceolate, brown at tip. **p.** 7, 8. *Snowy.* Alps.

14. **atrata.** Stem simple, pubescent. L. pinnatipartite: the upper divisions again divided into 3–5 segments, nearly smooth. Root-L. stalked. Stem-L. sessile: segments linear, acuminate. Corymb simple. Stalks villous. Chaff lanceolate, black at tip. **p.** 7, 8. *Mountains.* s. Eur.

β. corymbosa. Lobes generally trifid; some pinnatipartite. Tyr. Salzb.

γ. intermedia. Lobes of lower L. pectinate, entire; of upper pinnatipartite. Valley of St. Nicolas.

15. **clusiana.** L. pinnate: outline oval. Lts. in numerous narrow linear segments. Corymb simple. *L. much more finely divided than in* A. atrata. **p.** 7, 8. *High moist.* s. e. Alps.

ii. *Stem one-flowered.*

16. **Barellieri.** Sericeo-tomentose. Stem simple, decumbent, leafless, 1-flowered. Root-L. bipinnate. Stem-L. pectinato-pinnatipartite. Segm. short, oblongo-elliptic, somewhat acute. Phyll. and Chaff with a fuscous, scariose margin. **p.** *High and gravelly.* Abruzzi.

17. **mucronulata.** Stems decumbent, hairless at base, villous above. L. sessile, pinnatipartite, pubescent. Lobes linear, acuminate, entire. Chaff obtuse, serrulate, brownish at tip. **p.** *Shady rocks.* Abruzzi.

B. *Ligulæ of the Rays about half as long as common calyx.*

i. *Flowers purplish or nearly white, in a corymbose panicle.*

a. *L. pinnate or pinnatifid, with a distinct linear rachis or inline.*

* *Rachis entire, or with only an occasional stray tooth below base of pinnæ.*

18. **chamæmilifolia.** Smooth. Stem terete, nearly simple. L. pectinato-pinnatipartite. Lobes linear, obtuse, quite entire. Corymb without bracts. Chaff oblongo-linear, acute, pale. **p.** *Rocks.* Olette and Villefranche, Pyr.

19. **odorata.** Stems numerous, from a woody neck. L. hairy, pinnatipartite. Div. pinnatifid. Segm. entire, or with a single tooth. Chaff hairy at the tip. **p.** 7, 8. *Calc. hills.* e. Pyr. Trieste. Monfalcone.

20. **Millefolium.** Stem furrowed at top. L. bipinnate and often further divided: outline linear: length about six times breadth. Segm. linear, acuminate. **p.** 6–9. *Pastures and uncult.*

β. setacea. Segm. of L. setaceous.

I have a plant from Florence, under the name of *longifolia,* where the length of the root-L. is fifteen times the breadth. It appears to be a distinct species.

21. **lanata.** L. bipinnatifid. Div. dentate, with acuminate teeth. Outline oblong. Length about three times breadth. **p.** 7, 8. *Mountain pastures.* Fiume. Carn. Styr.

22. **sylvatica.** "Pubescent. Stem simple. L. bipinnatifid: outline ovato-oblong. Lobes crowded, lanceolato-oblong, inciso-serrate. Rachis broad. Cal. oblong, angular. Chaff hyaline, acute, somewhat hairy. **p.** *Shady mountains.* Garg. Calab. Lucania."—Ten.

23. **punctata.** "Stem simple, somewhat pubescent, striate. L. oblong on the outline, decursively pinnate, villoso-punctate. Lts. linear, pinnatifid. Div. trifid, mucronato-dentate. Corolla trifid, *yellowish.* **p.** *Mountain pastures.* Arapietra, Campo Aprico in the Abruzzi."—Ten.

** *Rachis toothed.*

24. **ligustica.** Finely pubescent. Stem erect, terete, branched. L. pinnatipartite. Rachis with a few long teeth. Div. pinnatifid. Segm. lanceolate, approximate. Outline ovate. Chaff acute, hyaline. **p.** 6, 7. *Rocks and open hills.* It.

✓ 25. **nobilis.** Pubescenti-villous. Stem erect, terete. Lower L. tripinnatipartite; upper bipinnatipartite. Outline oval. Lobes somewhat distant, dentate, acute. Rachis with many short teeth. Chaff acute, hyaline. **p.** 7, 8. *Dry hills.* s. and m. Eur.

b. *L. without a distinct linear rachis, the intervals being more or less cuneate and toothed.*

✓ 26. **tanacetifolia.** Erect, pubescent. L. pinnatifid, incise, dentate: outline elliptic. Chaff oblong, smooth, acute. **p.** 7, 8. *Mountain pastures.* s. e. Sw. Carn. *This seems to be* dentifera *of DC.; his* tanacetifolia *is probably a var. of* Millefolium.

✓ 27. **tomentosa.** Hirsuto-tomentose. L. pinnate, multifid. Lobes setaceous, quite entire. Pan. corymbose, crowded, many-flowered. Chaff membranous, somewhat acute, with a few ciliæ at top. **p.** 6, 7. *Open dry.* s. Eur.

ii. *Rays yellow.*

✓ 28. **Ageratum.** Nearly smooth, herbaceous, erect. L. oblong, obtuse, serrate, attenuate, fascicled. Pan. crowded. Phyll. mucronate. Rays 3–5, somewhat differing in shape. **p.** 7, 8. *Open grassy.* s. Fr. It.

Not well known.

29. **decipiens.** L. smooth. Root-L. somewhat tripinnate: pinnules linear, acuminate, mucronate, few, spreading. Stem-L. bipinnate: uppermost pectinate, with very narrow segments. Rays much shorter than the oblong calyx. **p.** Styria, *not unfrequent. Allied to* A. magna, *i. e., to* A. tanacetifolia.—DC.

444. PYRETHRUM.

A. *Flowers all white.*

1. **macrophyllum.** Stem erect, somewhat villous. L. somewhat hairy, nearly sessile, pinnatipartite, broadly lanceolate, coarsely dentate, decurrent on the dentate rachis. Corymb compound. Cal. nearly globose. Rays 5, 6, flat, obovate, tridentate. Crest (pappus) very short, entire. **p.** 6, 7. *Woody hills.* Görganz-Wald, Carniola. "*Habit of* Achillea macrophylla."

✓ 2. **Parthenium.** Smooth. Stem erect, branched, striate. L. stalked, pinnate. Lts. pinnatifid, dentate: uppermost confluent. Fl. corymbose. Phyll. oblong, albido-membranous on margin, eroso-ciliate at top, obtuse. Rays twice calyx. Crest short, dentate. **p.** 6, 7. *Walls and uncult.*

✓ 3. **corymbosum.** Nearly smooth. Stem erect, angular, branched at top. L. pinnate. Lts. lanceolate, pinnatifid. Lobes acute, acutely serrate: upper confluent. Fl. corymbose. Phyll. ovato-lanceolate. Margin fusco-scariose. **p.** 6, 7. *Woody hills.*

4. **Achilleæ.** Nearly smooth. Stem erect, angular, branched at top. L. pinnate. Lts. somewhat distant, almost pinnatipartite. Lobes lineari-lanceolate, acute, acutely subdentate. Fl. corymbose. Phyll. linear, oblong. Margin pale, fusco-scariose. **p.** *Woody hills.* Sarzana. Pisa. Nap.

B. *Rays white or pinkish. Disc yellow.*

✓ 5. **inodorum.** L. sessile, bipinnatipartite. Segm. capillary. Branches naked at top, 1-flowered. Fr. with 3 prominent, smooth ribs. Inter-ribs rugose; one of them broad and two narrow. Two rounded depressions just below the elevated, entire border. **a.** 7, 8. *Fields.*—Bab.

6. **maritimum.** Smooth. L. bipinnatipartite. Lobes linear, fleshy, convex above. Branches naked at top, 1-flowered. Fr. with 3 prominent, smooth ribs. Outer Inter-rib broad and rugose; inner reduced to mere lines. Two elongated Spots just below the lobed border. **p.** 7, 8. *Shores.* Eng. w. Fr.—Bab.

7. **ceratophylloides.** "Smooth. Stem erect, leafy at base, naked at top, nearly simple. L. pinnatilobed. Lobes lanceolate or linear, acuminate. Fl. solitary. Phyll. oblong. Margin brown, eroso-dentate. Crest obliquely incise, crenate. **p.** *Mountains.* Pdm. Abr. Pyr."—DC.

✓ 8. **alpinum.** Tufted, smooth. Stems 1-flowered. Lower L. stalked, pectinato-pinnatifid. Lobes approximate, quite entire, linear, acute. Uppermost L. linear, entire. Leafy part of Phyll. obtuse. **p.** 7, 8. *Very high rocks.* Alps. *rare in* Pyr.

β. *pubescens.* Pubescent, or somewhat villous. Phyll. ciliate. Sw. and Dau. *rare.* e. Pyr. *freq.*

9. **tomentosum.** Tomentose, tufted, decumbent. L. crowded on short stalks, 3–5-partite. Lobes oblong, quite entire. Stalks shortly exsert, naked, 1-flowered. Outer Phyll. ovate and somewhat acute. **p.** *Very high.* Monte Rotondo, Cors.

10. **Halleri.** Tufted, smooth. Lower L. stalked, cuneiform, inciso-dentate; upper lanceolate, inciso-serrate. Stem naked at top, 1-flowered. Crown of Seeds of Ligulate Flts. nearly as long as tube of floret. **p.** 7, 8. *Gra-*

velly. Alps. *Probably* Chrysanthemum atratum *of Linn.*, Koch.

C. *Rays yellow, as well as disc.*

✓ 11. **Myconis.** Erect, branched. L. serrate. Lower L. obovate, somewhat attenuate. Stem-L. ligulate, semiamplexicaul. Branches 1-flowered. Phyll. hardly margined. *Resembles* Chrysanth. segetum. **a.** 5, 6. *Fields.* s. Eur.

β. hybridum, Guss. L. less sharply serrate.

445. LEUCANTHEMUM.

A. *Lower L. bipinnatipartite; upper pinnatipartite.*

1. **cebennense.** Smooth, branched at base. Branches long, nearly simple. Lower L. stalked; upper sessile. Lobes linear, sometimes divided at top. Fl. terminal, solitary. **p.** 7. *Shady.* Cevennes. Ardèche.

B. *Lower L. lyrate.*

2. **corsicum.** L. oblongo-ovate: upper oblongo-elliptic. Segm. narrow, calloso-mucronate, acuminate, quite entire. Crown divided by a deep sinus. **p.** Cors.

C. *Lower L. cuneate or obovate, nearly undivided.*

[I have given De Candolle's descriptions in this section, doubting whether they do not all apply to one, or, at most, to two species.]

i. *Seeds of Rays crowned.*

3. **latifolium.** "Nearly smooth. Stem erect, terete, somewhat striate, and sparingly branched. L. semiamplexicaul, ovato-lanceolate, coarsely calloso-serrate. Phyll. coriaceous, oval, obtuse, pallido-hyaline at top. Crown of outer Seeds short, of 2 or 3 ears. **p.** Pyr. ?"—DC.

4. **pallens.** "Stem erect, hispid, simple or somewhat branched. L. somewhat hispid: lower stalked, obovate, obtuse, crenate; upper semiamplexicaul, ligulate, with obtuse teeth; uppermost entire. Branches naked above, 1-flowered. Phyll. ovate, oblong, obtuse, pale: innermost hyaline at top, brown, bipartite. **p.** *Shade.* Grasse, Prov."—DC.

5. **lanceolatum.** "Smooth. Stem erect, terete, sparingly branched. L. lanceolate, all very acute and acutely inciso-serrate at base: lower attenuate into stalk. Branches naked above, 1-flowered. Phyll. oblongo-lanceolate, obtuse, hardly rufous on margin, brown, toothed, not cloven at the back of the ligule. **p.** 6. Fr. *very rare.*"—DC. *Var. of* L. montanum, Koch.

6. **heterophyllum.** "Smooth. Stem erect, simple, 1-flowered, striate, naked at top. L. long, sessile: lowermost attenuate, lanceolate, serrate; upper linear, quite entire. Phyll. oblongo-lanceolate. Margin rufous. Tip of the inner ones hyaline, brown, dentate in front, deeply cut down on the back of the ligule. **p.** *Shady hills.* Carseletti, Pdm."—DC. *Var. of* L. montanum, Koch.

7. **atratum.** "Smooth. Stem erect, simple, naked at top, 1-flowered. Lower L. cuneate, attenuate into stalk: summit very obtuse, with 3–5 teeth; elsewhere coarsely dentate. Phyll. lanceolate, oblong, with a dark brown margin. Crown nearly entire. **p.** *High pastures.* Alps. Auv."—DC. *Probably a var. of* L. montanum, Koch. ✓

8. **montanum.** "Smooth. Stem erect, striate, simple, naked at top, 1-flowered. Lower L. attenuate into long stalk, lanceolate, obtuse, dentate at top. Stem-L. sessile, ligulate, dentate at top; uppermost entire, mucronulate. Phyll. oblong, obtuse, pale and hyaline on margin. Crown toothed, various. **p.** 6, 7. *Open stony.* s. Eur.?"—DC. ✓

9. **graminifolium.** "Smooth. Stem erect, terete, naked at top, 1-flowered. Lower L. stalked, narrow, obovate, dentate; the rest sessile, linear, quite entire. Phyll. lanceolate. Margin fuscous. Crown dentate, complete. **p.** *Dry open.* s. Fr. It."—DC. *Perhaps a var. of* L. montanum, Koch.

ii. *All the Seeds bald.*

10. **vulgare.** "Erect, somewhat branched. Lower L. stalked, obovate, dentate. Stem-L. semiamplexicaul, serrate, inciso-serrate at base. Stem and branches naked at top, 1-flowered. Phyll. with a narrow, rufous margin. **p.** 6, 7. *Meadows, &c.*"—DC. ✓

11. **maximum.** "Smooth. Stem ascending, somewhat angular, simple, or branched only quite at the base, naked at top, 1-flowered. Lower L. stalked, cuneate at base, lanceolate, dentate in the upper half. Stem-L. sessile, broadly lineari-lanceolate, serrate in their whole length. Phyll. oblong, with an albido-hyaline margin at top. **p.** *Meadows.* Pic de l'Héris near Barrège."—DC. ✓

446. NANANTHEA.

1. **perpusilla.** L. stalked, pinnatipartite. Segm. 2 or 3 on each side, obtuse, quite entire. **a.** 5. *Rocks.* Isle of Sanguinaria near Ajaccio, and I. Lavezzo near Bonifacio. w. Sard. *A very small plant.* ✓

447. CHRYSANTHEMUM.

1. **segetum.** Herbaceous, smooth. Stem erect, branched. L. amplexicaul, some coarsely serrate, others laciniate. Branches naked at top, 1-flowered. Phyll. obtuse. Margin broad, scariose. **a.** 5. *Fields.*

2. **coronarium.** Herbaceous, smooth. Stem erect, diffuse. L. auriculato-semiamplexicaul, bipinnatipartite. Lobes lanceolate, broader at top, inciso-serrate. Branches naked at top, 1-flowered. Cal. campanulate. All Phyll. scariose at top. **a.** 4, 5. *Coasts* of Mdt.

3. **italicum.** Stem procumbent. L. bipinnate, serrate. Rays very long. **p.** Italy. *An obscure species, said to resemble* Pyrethrum millefoliatum, *a species from Tauria, but more erect, and with white rays.*—DC.

448. MATRICARIA.

1. **Chamomilla.** Smooth, branched. L. bipinnatipartite. Segm. narrow linear, often divided. Stalks naked at top, 1-flowered. Phyll. with a whitish margin. **a.** 5, 6. *Uncult. and fields.*

449. LONAS.

1. **inodora.** L. pinnatipartite. Segm. acuminate. **a.** 5, 6. *Dry fields.* Sic. Arles.

450. TANACETUM.

A. *Circle of tubular, tridentate female florets.*

1. **vulgare.** L. bipinnatipartite; the Rachis and Lobes inciso-serrate. Corymb many-flowered. **p.** 7, 8. *Banks.*

B. *All Florets alike, 4–5-toothed.*

2. **Audiberti.** L. bipinnate. Lts. oblongo-linear, pinnatifid. Lobes acute. Branches long, naked, 1-flowered, disposed in a few-flowered corymb. **p.** 7, 8. *Woody hills.* Cors. *In the high wood of* Valdaccello, Sard.

3. **annuum.** Root-L. bipinnate. Stem-L. pinnate. Lobes crowded, linear, mucronato-acute: uppermost linear. Corymb fastigiate, the central stalk much shorter than the rest. **a.** 9, 10. *Fields.* s. Fr. It.

4. **Balsamita.** L. undivided, ovate, serrate: lower stalked; upper sessile, auricled. Fl. corymbose. **p.** 7, 8. *Walls and dry banks.* s. Fr. s. Sw. Tusc. Sic.

451. PLAGIUS.

1. **ageratifolius.** Stem shrubby at base. Branches many-flowered. L. obovate, serrate, sessile, equidistant. **p.** 6, 7. *Marit. pastures.* Cors. Sard.

2. **virgatus.** Stem herbaceous. Branches nearly naked at top, 1-flowered. L. lanceolate, serrate: lowermost attenuate into stalk; upper linear, quite entire. **b.** *Hills.* Lescarene near Nice. w. Lig.

452. SANTOLINA.

1. **Chamæcyparissias.** Shrubby. L. hoary, with 4 rows of short, very obtuse teeth. Phyll. lanceolate. Midrib hardly prominent. **s.S.** 7, 8. *Open.* s. Eur.

α. *incana.* Phyll. downy. s. Fr. It. &c.

β. *tomentosa.* Phyll. mealy. Sard. K. Nap.

γ. *squarrosa.* Phyll. smooth. Fl. small. s. Fr.

δ. *villosissima.* Phyll. smooth. L. very villous. Fl. small. Mt. St. Victoire, Prov.

2. **ericoides.** "Stems smooth, tufted. Branches hoary. L. nearly smooth, at last green, pinnately toothed. Teeth spreading, very short and blunt. Cal. small, smoothened. **w.** 6, 7. *Open hills.* Ætna."—Guss.

3. **viridis.** Shrubby, hairless. L. with 4 rows of naked, subulate teeth. Phyll. lanceolate. Midrib somewhat prominent. **s.S.** 7, 8. Languedoc.

4. **pectinata.** Shrubby, diffuse, downy. L. pinnatipartite. Segm. linear, obtuse, entire or trifid, 6 to 8 on each side. Phyll. lanceolate, keeled. **s.S.** 6. Prats de Mollo, e. Pyr.

5. **rosmarinifolia.** Hairless. L. linear, somewhat acute, undivided; lower with a tuberculate margin; upper flat, entire or only somewhat toothed at top. Phyll. somewhat keeled, acute: inner scariose at top. **s.S.** 7, 8. Prov.

6. **leucantha.** Tufted, hairless. Lower L. pinnatipartite. Segm. in 2 rows in lower, in 4 in upper part of L., linear, somewhat acute, spreading. Phyll. keeled, with a brown expanded tip. **s.S.** 6. *Rocky.* Mountains of Carrara.

7. **alpina.** Stem herbaceous, erect, nearly simple. L. silky, pinnatifid. Segm. linear, generally entire. Phyll. lanceolate. Midrib inconspicuous. **p.** *High gravelly.* Monte Morrone. Abr.

I have adopted the descriptions of DC., ex-

cept in ericoides *and* leucantha, *but they are not satisfactory.*

453. DIOTIS.

1. **candidissima.** Plant covered with a thick white cotton. L. oblong, semiamplexicaul. Fl. in a corymb. **p.** 7, 8. *Sandy shores.*

Tribe V. *SENECIONIDEÆ.*

454. DORONICUM.

A. *Root-L. cordate.*

1. **caucasicum.** Neck of Root covered with silky wool. Stem simple, 1-flowered. L. crenato-dentate. Root-L. stalked, cordato-subrotund. Lower stem-L. somewhat cordate. (Stalks auricled, DC.); upper semiamplexicaul. (Recept. covered with short hairs, Koch.) Seeds of Ray quite smooth. **p.** 6–8. *Shade.* K. Nap. Sic. s. e. G.

2. **Columnæ.** Root creeping, knotty. Neck not bearded. Stem simple, 1-flowered. L. dentato-angular, somewhat rough. Root-L. cordato-reniform, on long stalks. Lower stem-L. auricled; middle cordate, or spatulato-cordate; upper ovato-lanceolate, amplexicaul. Seeds of Rays somewhat pubescent. **p.** *Shady mountains.* K. Nap. Apuan Alps. Tyr.

3. **Pardalianches.** Hirsute. Root with long, slender runners. Neck not bearded. L. dentate. Root-L. stalked, cordate. Lower stem-L. somewhat ovate, the stalks auricled; uppermost amplexicaul, acute. Fl. stalked, numerous. **p.** 5, 6. *Hilly woods.*

β. *humile.* L. ciliate. Stalk of root-L. winged. Upper L. very few, ovato-lanceolate. K. Naples.

4. **austriacum.** "Somewhat hirsute. L. denticulate. Root-L. stalked, cordate. Lower stem-L. spatulato-ovate, abruptly attenuate, semiamplexicaul; uppermost cordato-amplexicaul, lanceolate."—DC. (No root-L. Lowest stem-L. much smaller than the following ones, approximate, cordate, acuminate, on an auricled stalk.—Koch.) *Both writers quote* Jacq., 'Fl. Aust.,' t. 130. **p.** 6–8. *Woody mountains.* Boh. Aust. Carinthia. e. Fr. Pyr.

B. *Root-L. ovate.*

5. **scorpioides.** Somewhat hirsute. Neck bearded. L. dentate. Root-L. stalked, ovato-rhombic. Lower stem-L. ovate, attenuate, cordato-amplexicaul; upper sessile, cordato-ovate, acute. **p.** *Woody hills.* Austria. Fr. Italy.

6. **plantagineum.** Smooth. Neck with a silky fleece. Stem nearly simple, 1-flowered. Root-L. stalked, ovate or oval, repando-dentate. Stem-L. nearly entire, lanceolate: lower attenuate into an earless stalk; upper sessile, oblong, acuminate. Seeds of Ray hairless. **p.** *Sandy shade.* Paris. Prov. G.

455. ARONICUM.

1. **corsicum.** Somewhat downy. Stem corymbose at top, 3–5-flowered. L. amplexicaul, attenuate: lower ovate; upper oblongo-lanceolate, dentate. Phyll. pubescent, somewhat ciliate. **p.** *Wet rocks.* Cors.

2. **Doronicum.** Hirsute. Stem hollow, 1-flowered. Hairs acute, with distant joinings. All L. soft and flexible, oblong. Root-L. stalked, attenuate. Inner Phyll. smaller, and exactly linear. **p.** 7, 8. *Very high, moist.* Alps. Pyr.

3. **glaciale.** Stem 1-flowered, solid except just under flower. Hairs acute, with distant joinings. L. rigid, ovate or oblong; lower stalked. Stem-L. semiamplexicaul. **p.** 7, 8. *Snowy.* Alps.

4. **scorpioides.** Stem 1-flowered. Hairs obtuse, with crowded joinings. Lower L. broadly ovate. Stem-L. ovate or oblong; upper amplexicaul. **p.** 7, 8. *High gravelly.* Alps.

456. ARNICA.

1. **montana.** Root-L. obovate, nearly entire, 5-nerved. Stem-L. 1 or 2 pair. Stem few-flowered. **p.** 6, 7. *Openings in woods.* m. Europe.

457. SENECIO.

A. Flowers without rays. L. divided. Sp. 1, 2.

B. Flowers with small revolute rays. L. divided. Sp. 3–5.

C. Flowers with expanding rays. L. divided (except in Sp. 7, 8, 9).

- **i.** Plant not hoary. Phyll. nearly as long as disc.
  - **a.** Calyx without accessory scales. Sp. 6.
  - **b.** Calyx with accessory scales.
    - * L. undivided. Sp. 7–9.

** L. imperfectly pinnatifid. Sp. 10–12.

*** L. distinctly pinnatifid, not lyrate. Sp. 13–18.

**** L. lyrate or lyrato-pinnatifid. Sp. 19–26.

***** L. multifido-bipinnate: all segments linear, acute. Sp. 27, 28.

ii. Plant hoary.

a. Corymb compound. Plant woody at base. Sp. 29–34.

b. Corymb simple, crowded. Seeds smooth. Sp. 35–37.

c. Flowers few, on long stalks, or solitary. Sp. 38.

D. L. undivided. Flowers with expanding rays (except in Sp. 41).

i. Flowers numerous, in a compound corymb. Sp. 39–44.

ii. Flowers few or solitary. Sp. 45–47.

A. *Rays wanting. Seeds nearly terete, striate. Phyllaries linear. L. divided: lower attenuate into stalk; upper with a divided auricle. Annual.*

✓ 1. **vulgaris.** Fl. in a corymb. L. pinnatifid. Segm. incise. Seeds hairy on the ribs. **a.** All summer. *Cult. and waste.*

β. Fl. with a few rays. Holstein. Norm.

2. **pygmæus.** Stem branched from base. Fl. solitary, terminal. Lower L. ovate, dentate. Upper L. oblongo-linear, nearly entire. Seeds downy. **a.** 2, 3. *Sandy and stony shores.* Cape Pojato, Sic.

B. *Rays small, revolute. Flowers in a corymb. Cal. nearly cylindrical. Phyllaries linear. L. as in* **A.**

✓ 3. **sylvaticus.** All L. pinnatifid. Segm. sinuate, nearly equal, oblong, and somewhat spatulate. Accessory Scales very small, adpressed, hardly sphacelate. Seeds pulverulento-pubescent. **a.** 7, 8. *Woods and waste.*

β. lividus. Upper L. more expanded at base.

4. **fœniculaceus.** Somewhat viscid, glandular. Lower L. obovate, sinuato-dentate; upper dentato-pinnatifid; uppermost somewhat triangular. Corymb 3–6-flowered. Accessory Scales 6–10, small. Seeds downy. **a.** All the year. *Dry.* Nap. Sic. Sard. Cors.

✓ 5. **viscosus.** Viscid, glandular. L. pinnatifid. Segm. sinuate: upper confluent. Accessory Scales lax, linear, half as long as phyllaries. Seeds hairless. **a.** 6–10. *Sandy woods and waste.*

C. *Flowers with expanding rays, in a corymb. Calyx turbinate. Phyllaries lanceolate (except in Sp. 7). L. as in* **A** *(except in Sp. 7, 8, 9, and sometimes 18).*

i. *Plant not hoary. Phyllaries nearly as long as disc.*

a. *No accessory Scales on the calyx.*

6. **gallicus.** Stem much branched. Outline of L. oblongo-spatulate. L. irregularly pinnatifid. Segm. narrow, incise. Corymb few-flowered. Stalks scaly. **a.** 6, 7. s. Fr. ✓

b. *Calyx with accessory scales.*

* *L. undivided.*

7. **ætnensis.** L. somewhat dentate: lower obovate, attenuate; upper lanceolate, auricled. Stem simple, densely leafy. Corymb somewhat compound, 6–12-flowered. Phyllaries linear. Scales numerous, short. Rays 10 or 12. Seeds finely downy. **p.** 7, 8. *High, on volcanic sand.* Ætna.

8. **Marmoræ.** *Glauco-pruinose.* Stem branched from base, ascending, hollow. L. thick, undivided, oblongo-obovate, semiamplexicaul. Corymb about 12-flowered. Stalks hardly twice as long as flowers. Seeds downy. **a.** 3–5. *Marsh.* Areola and Paulli Latino, Sardinia.

9. **incrassatus.** "L. fleshy, *inodorous*, obovate or oblongo-spatulate: lower stalked, dentato-crenate; upper sessile, dentato-incise. Corymb very lax. Cal. smooth, at last conical. Phyll. thickened at base, not sphacelate. Seeds cylindrical, obscurely striate. **a.** 4, 5. *Stony shores.* Maretimo, Sic."—Guss. *Resembles* Bellis annua.

** *L. imperfectly pinnatifid.*

10. **leucanthemifolius.** Stem branched from base, diffuse. Lower L. obovato-dentate; middle L. spatulate, dentato-pinnatifid; upper inciso-dentate. Fl. few. *Stalks scaly.* Seeds downy. **a.** All the year. *Dry.* Sic. Calab. Ostia. Solfatara of Tivoli.

β. humilis. Fl.-stalks without scales. Cors. Sard. Sic.

11. **vernus.** "Smooth. L. not fleshy: Lower L. stalked, obovato-spatulate, dentato-crenate or entire; upper amplexicaul, pinnatifid. Segm. toothed. Corymb somewhat lax, few-flowered. Phyll. smooth, sphacelate. Seeds ✓

cylindrical, striate, downy. **a.** 11–5. *Open coasts.* Sic."—Guss.

12. **vernalis.** Woolly. L. oblong, sinuato-pinnatifid. Margin curled and toothed. Segm. ovate. Corymb lax. Accessory Scales 6–12, one-fourth of length of calyx. Seeds hoary. Crest permanent. **a.** 4. *Clay fields and woods.* Rosenberg and Troppau, both in Silesia.

*** *L. distinctly pinnatifid, not conspicuously lyrate.*

13. **crassifolius.** Much branched. L. fleshy, pinnatifid, widest on the auricles! Segm. 3–5, somewhat cuneate, dentate. Stalks few, 1-flowered. Scales few. Seeds finely downy. **a.** 4, 5. *Sandy coasts.* Mars. Sic.

14. **squalidus.** L. pinnatifid. Lower L. stalked, less divided; upper sessile, semiamplexicaul. Outline somewhat broader upwards. Segm. linear or oblong, distant, dentate, acute. Fl.-stalks scaly towards the top. Phyll. united at base. Outer Scales few and small. All Seeds silky. **a. b. p.** 6, 7. adr. G. Base of Ætna towards the shore, *abundant.* Oxford.

15. **nebrodensis.** Erect. L. pinnatifid. Outline broadest upwards. Segm. oblong or somewhat cuneate, acutely inciso-dentate. Phyll. and accessory Scales quite smooth, black at the tip. Seeds downy. **p.** DC. **a.** Koch. *Calc. rocky.* Nebr. Mts. of Carrara. e. Alps.

β. *paradoxus.* No rays.

16. **erucifolius.** Stem erect, corymbose. L. pinnatifid, hoary beneath. Outline elliptic. Lateral Segm. nearly entire; upper confluent. Rays oblong. Seeds downy. **p.** 7, 8. *Thickets and rough ground.*

17. **præaltus.** Stem-L. semiamplexicaul; lower bipinnatifid. Segm. linear, somewhat obtuse (acuminate, Pollini), dentate, nearly flat. Accessory Scales small. Seeds of Ray hairless; of Disc downy. **p.** 8, 9. *Sandy hills.* Berician Hills near Vicenza.

18. **Jacobæa.** L. elliptic, pinnatific. Segm. pinnatifido-incise, somewhat enlarging upwards. Seeds of Ray smooth; of Disc setoso-scabrous. **p.** 7–9. *Meadows and waste.*

β. No rays. = flosculosus Jord.

**** *L. lyrate or lyrato-pinnatifid.*

19. **aquaticus.** Stem erect, branched, very widely spreading. Lower L. stalked, lyrato-pinnatifid, obtusely dentate; terminal lobe ovate. Upper L. pinnatifid (with a divided auricle. Segm. oblong or linear, rising obliquely from midrib, Koch). Fl.-stalks scaly. (Seeds of Disc muriculate under a glass, DC.) **p.** 7, 8. *Ditches and splashes.* Br. Fr. Switzerland.

20. **erraticus.** "Lower L. stalked; the others semiamplexicaul, with a divided auricle. Segm. obovato-oblong, very widely spreading. Terminal lobe of root-L. cordato-ovate; of upper L. cuneate. Marginal Seeds smooth. **b.** 7, 8. *Moist meadows.* Frankfort-on-Oder. Tyr. Carn."—Koch.

21. **lyratifolius.** L. lyrato-pinnate. Lateral lobes detached; terminal large, ovate, doubly and acutely serrate. Fl.-stalks enlarged and scaly at top. Seeds setoso-scabrous. **p.** 7, 8. *Alpine valleys.* Sar. Sw. G.

22. **lycopifolius.** "Stem and under side of L. grey, tomentose; upper side floccose or smooth. Root-L. obovato-oblong, attenuate into a long stalk, crenate. Stem-L. gradually smaller, nearly sessile, ovato-lanceolate, inciso-pinnatifid at base. Segm. acutely dentate; the terminal one very large, acute, dentato-serrate. Base of Cal. villous. Phyll. not sphacelate; outer lax. Seeds striate, hirsute. **p.** 8–11. *Moist clay.* Sic."—Guss. *Query if* S. lyratifolius?

23. **alpinus.** L. stalked, cordate, longer than broad; the stalk naked, or furnished with small Lts. L.-stalk with short auricles. Fl.-stalks scaly. Seeds smooth. **p.** 7, 8. *Rough meadows and near folds.* Alps. Apenn.

24. **subalpinus.** L. stalked, triangulari-cordate. Breadth fully equal to length. Stalk naked or furnished with small Lts. Fl.-stalks scaly. Seeds smooth. **p.** 7, 8. *Moist mountains.* Aust. Sil.

25. **delphinifolius.** Lower L. ovate, lyrato-pinnatifid; others bipinnatifid. Segm. linear, acute, trifid, somewhat revolute on margin. Scales and Phyll. hairless, not sphacelate. Seeds ovoid-oblong, somewhat rough. **a.** 4, 5. *Fields.* Sic. Sard.

26. **Scheuchzeri.** L. pinnate, acute. Lts. linear; upper confluent into a lanceolate semi-pinnate lobe. Phyll. united for two-thirds of their length! Accessory Scales 0, 1, or 2; long, filiform. Mont Pilat, Sw. *Not now found.*—Gaudin.

***** *L. multifido-bipinnate: all Segments linear or lineari-lanceolate, acute.*

27. **artemisiifolius.** L. smooth, pinnati-

partite: lowest divisions entire; upper pinnatipartite or multipartite. Corymb compound, many-flowered. Rays 5. Flts. of disc about 10. Seeds smooth. Crest persistent. **p.** 7, 8. *Dry slopes.* Montlhéri. Cev. Auv. Pyr.

28. **abrotanifolius.** L. smooth, pinnatipartite: lower entire; upper pinnatifid. Corymb about 5-flowered. Scales 3–6, half as long as phyllaries. Rays about 12. Flts. of Disc 40–50. Seeds smooth. Crest persistent. **p.** 7, 8. e. Alps. ✓

ii. *Plant hoary.*

a. *Corymb compound. Plant shrubby.*

29. **bicolor.** "L. niveo-tomentose beneath, dark green above; lower lyrate; the rest pinnatifid. Segm. broadly linear, nearly entire; terminal oblong. Cal. hoary. **w.** 6, 7. *Marit. rocks.* Sic. Islands."—Guss.

30. **ambiguus.** Stem nearly naked at top. L. hoary beneath, greenish grey above, lyrato-pinnatifid. Lateral Segm. somewhat cuneate, toothed on outer side. Cal. covered with yellowish meal. **w.** 7, 8. *Volcanic or granitic rocks.* Ætna.—Guss. Monte Gargano.—DC.

31. **candidus.** Everywhere cano-tomentose. Stem somewhat shrubby at base. L. stalked: lower ovate, lyrato-sinuate, repando-dentate at top; upper oblong, somewhat repand. Accessory Scales of Cal. few, very small. Rays 6–8, small, ovato-oblong. Seeds smooth, somewhat angular. **w.** 6–8. *Open calcareous hills.* Nebrodes.

32. **gibbosus.** Somewhat shrubby at base. L. hardly stalked, pinnatipartite, smooth, somewhat hoary beneath. Lobes about 5 on each side, somewhat sinuate, obtuse, generally 3-lobed at top. Phyll. smooth, generally 3-lobed on margin, without accessory scales. Seeds nearly smooth. **w.** 6, 7. *Sandy hills.* Messina. Milazzo. Calabria.

33. **Cineraria.** L. stalked, smooth or webby above, pinnatifid. Div. enlarging upwards, obtusely lobed. Accessory Scales very few, woolly, as are the Phyllaries. Seeds hardly downy. **w.** 6. *Rocky or stony shores.* Mdt. ✓

β. ceratophyllus. L. nearly white above.

34. **leucophyllus.** Altogether white. Stems tufted. L. stalked, cuneato-spatulate, pinnatifid. Lobes obovate, overlapping; lower distant and deeper. Corymb nearly simple, crowded. Cal. hardly half as long as disc. Accessory scales few and small. Seeds downy. **s.S.** *High open rocks.* e. Pyr. Mont Mezin, not far from sources of the Loire. ✓

b. *Corymb simple, somewhat crowded. Seeds smooth.*

35. **incanus.** Plant altogether white with adpressed hairs. Stems tufted. Lower L. obovate. Lobes incise, the upper overlapping. Upper L. oblong, with separate, linear Lts. Rays 2–5, oval. Cal. about half as long as florets. Accessory Scales few. **p.** 7, 8. *High gravelly.* Alps. ✓

β. glabratus. L. nearly smooth.

γ. italicus. L. bipinnatifid.

36. **parviflorus.** Plant altogether hoary. Stems tufted. L. stalked, pinnate. Lts. linear, lobed or dentate. Rays 2–5, very small, oblong. **p.** Val Macra and Monte Bego, Pdm.

37. **carniolicus.** L. somewhat silky with adpressed hairs: lower oblong, very attenuate, dentato-pinnatifid; upper pinnatifid. Lobes not overlapping. Rays 6–8, oblong, hardly exceeding florets of disc, which are more than twice as long as phyllaries. **p.** 7, 8. *High mountains.* Carn. Styr. Carinthia. Gris. ✓

c. *Flowers few, on long stalks, or solitary.*

38. **uniflorus.** Cano-tomentose. Lower L. stalked, oblong; upper sessile, linear, entire. Cal. half as long as disc. Seeds pubescent. **p.** 7, 8. *Very high.* Sw. Pdm. ✓

D. *L. undivided. Flowers mostly with expanding rays.*

a. *Flowers numerous, in a compound corymb.*

39. **nemorensis.** Root not creeping. L. elliptico-lanceolate, acuminate. Teeth of Serratures straight. Lower L. attenuate into a winged stalk; upper sessile. Accessory Scales 3, equalling phyllaries. Rays 3–6. Flts. of Disc about 20. Seeds hairless. **p.** 7, 8. *Woody hills.* Fr. n. and e. G.—Koch. ✓

β. Fuchsii. Flts. of Disc 12–15. Bracts lineari-setaceous. ✓

γ. octoglossus. Rays 7–8.

40. **saracenicus.** Root extensively creeping. L. oblongo-lanceolate, very acute, attenuate. Teeth of Serratures incurved. Lower L. on a winged stalk; upper sessile, enlarged at base. Scales 5. Rays 7–8. Flts. 25–30. **p.** 7, 8. *Moist thickets.* ✓

β. flosculosus. Rays wanting.

41. **Cacaliaster.** L. lanceolate, unequally toothed, nearly equal. Lower L. somewhat decurrent. Accessory Scales as long as phyllaries. Rays 0. Seeds hairless. **p.** 7, 8. *Woody hills.* Auv. s. Tyr. *There are sometimes a few pale rays.*

✓ 42. **Doria.** L. fleshy, somewhat glaucous, finely dentate. Root-L. stalked, oblong. Middle stem-L. oblongo-lanceolate, semiamplexicaul, somewhat decurrent; upper few, small, acuminate. Scales very short. Rays 5–6. Seeds hairy. **p.** 7, 8. *Meadows and banks of rivers.* s. Eur.

✓ 43. **paludosus.** Stem straight, hollow. L. elongato-lanceolate, acuminate, erect, somewhat woolly beneath, semiamplexicaul, sharply serrate. Accessory Scales about 10, half as long as phyllaries. Rays 15–16, narrow. Seeds hairy. **p.** 7, 8. *Moist.*

44. **linifolius.** Stem branched. L. sessile, linear, acute, quite entire. Rays 8–10. Seeds finely downy. **w.**—DC.; *but other authors describe it as herbaceous.* Pdm.

b. *Flowers few or solitary.*

✓ 45. **Tournefortii.** L. somewhat fleshy, not at all tomentose, lanceolate. Teeth strong, separated by a semilunar sinus. Fl. 1–5. Phyll. ciliolate. Accessory Scales few or 0, linear. Rays 14–15. Seeds hairless. **p.** 8, 9. *High moist rocks.* Pyr.

✓ 46. **Doronicum.** Tomentose. L. coriaceous, dentate. Root-L. ovate, attenuate into stalk. Stem-L. auriculato-amplexicaul; upper acuminate. Cal. hardly woolly. Accessory Scales numerous, equalling phyllaries. Rays 12–15. Crest very white. Seeds hairless. **p.** 7, 8. *High rough pastures.* Fr. G. Sw. It.

β. *rotundifolius.* Root-L. subrotund.

γ. *tomentosus.* Plant very hoary.

47. **lanatus.** Woolly. Stem erect, 1-flowered. L. thin, serrato-dentate. Lower L. stalked, elliptic, obtuse; upper lanceolate, expanded at base, sessile. Accessory scales equalling densely woolly phyllaries. Rays 15–30. **p.** 5, 6. *Meadows and walls.* adr. G. Tusc. K. Nap.

458. CINERARIA.

A. *Stem simple, bearing a simple corymb or umbel.*

i. *Seed smooth* (*except occasionally in* C. alpestris).

a. *Crest about equalling tube of florets of disc.*

1. **crispa.** L. webby, not seabrous. Lower L. stalked, ovate or cordate; middle longer, attenuate into a broadly winged stalk; uppermost sessile, lanceolate or linear, nearly entire. **p.** 5, 6. *Mountain meadows.* e. G.

α. L. and wing of the Stalk curled.

β. *rivularis.* Not curled. Phyll. all green.

✓ γ. *sudetica.* Not curled. Phyll. purple-tipped.

δ. *Schkurii.* Differs from γ in having no cordate L.

ε. *crocea.* Phyll. purple. Fl. croceous.

2. **pratensis.** L. webby. Lower L. repando-dentate, oblong, attenuate into stalk; middle lanceolate, attenuate; upper lanceolate or linear, sessile. **p.** 5, 6. *Boggy meadows.* Salzburg.

3. **alpestris.** L. dentate, hirto-scabrous and more or less woolly. Lower L. stalked, ovate, crenato-dentate; middle oblongo-ovate, attenuate into a broadly winged stalk; uppermost sessile, lanceolate or linear. Corymb about 5-flowered. Stalks naked. **p.** 5–7. *Subalpine.* e. Alps.

β. *clusiana.* Densely woolly.

γ. *ovirensis.* Fl.-stalks scaly.—DC.

b. *Crest about equalling florets of disc.*

4. **papposa.** L. denticulate. Lower L. ovate, attenuate into a slightly-winged stalk; uppermost sessile, lineari-lanceolate. Fl. 3–5. Rays linear, 18–20. **p.** Boh. and Carinthia. *Koch considers this a smooth-seeded var. of* C. campestris.

5. **balbisiana.** Stem-L. coarsely serrate, oblongo-lanceolate. Fl. 10–12. Stalks sulcate. Phyll. smooth, narrow, acuminate. **p.** *High wet.* Tende. Monte Vesulo. Val Pesco. Pdm. *Easily distinguished by the sulcate Fl.-stalks.*

ii. *Seed pubescent.*

a. *Crest about as long as florets of disc.*

✓ 6. **aurantiaca.** L. nearly even, hardly woolly, nearly entire. Root-L. ovate, attenuate into a short, winged stalk. Lower stem-L. lanceolate; upper lineari-oblong or linear. Phyll. coloured. Seed densely hispid. **p.** 5. Carinthia, at the foot of the Alps. Sty. Boh. —Koch. *Mountain meadows.*—DC.

β. *capitata.* L. hirto-scabrous and woolly. Rays 0. *Mountain meadows.* Sw. Tyrol. —Koch.

b. *Crest about equalling tube of florets.*

✓ 7. **spatulifolia.** L. webby on the upper surface, woolly beneath. Lower L. ovate, attenuate into a long haft; upper sessile, lanceolate or linear. Phyll. woolly, very acute. Seeds densely hispid. **p.** 5. *Rough woody hills.* w. G. *Moist meadows.*—DC.

8. **campestris.** L. araneoso-lanate. Root

ovate or nearly circular, attenuate into a short stalk. Lower stem-L. oblong, attenuate; uppermost lanceolate. Phyll. nearly smooth at top. Seeds densely hispid. **p.** 7, 8. *Calc. meadows.* Eng. Fr. G.

B. *Stem branched. Branches corymbose.*

✓ 9. **palustris.** Villous. L. lanceolate, semi-amplexicaul. Lower L. sinuato-dentate. Seeds smooth. Hairs of Crest numerous. **a. b.** 6, 7. *Marshy.* n. Fr. n. G. e. Eng.

459. LIGULARIA.

1. **sibirica.** L. subsagittato-cordate, on long stalks. Stem-L. with an entire sheathing base to the stalk. Rac. simple. **p.** 6, 7. *Marshy meadows.* Habstein, Boh.

Tribe VI. *EUPATORIACEÆ.*

460. HOMOGYNE.

✓ 1. **sylvestris.** L. reniform, acutely cut into 7–9 lobes, alternate. Lobes tridentate. **p.** 5, 6. *Woody mountains.* Carinthia. Carn. Styria.

2. **alpina.** L. reniform, dentato-crenate, pubescent on the nerves beneath. **p.** 5–7. *High pastures.* Jura Alps.

3. **discolor.** L. cordato-orbicular, undulato-dentate, tomentose beneath. **p.** 5–7. *Very high pastures.* e. Alps.

461. PETASITES.

✓ 1. **vulgaris.** L. broadly cordate, unequally dentate, cottony beneath. Lobes of the base rounded, approximate. Stigmas of complete Flts. short, ovate. **p.** 3, 4. *Wet.*

- α. Thyrsus ovate. Stalks simple. Fertile Flts. few or none; antheriferous numerous, unproductive.
- ✓ β. *hybridus.* Thyrsus oblong. Stalks branched. Only a few male Flts. in the disc; the others with styles only.

✓ 2. **tomentosus.** L. broadly cordate (somewhat triangular, Koch), unequally denticulate, niveo-tomentose beneath. Lobes of base incurved, subdivided. Thyrsus somewhat corymbose. Stigmas of complete Flts. short, ovate. **p.** 4. *Banks of rivers.* Elbe and Oder.

✓ 3. **albus.** L. broadly cordate, angular, mucronato-dentate, woolly beneath. Lobes of base rounded. Thyrsus ovate or fastigiate. Stigma of complete Flts. lineari-lanceolate, acuminate. **p.** 4, 5. *Moist mountain meadows or streams.* n. Eur.

4. **niveus.** L. broadly cordate, somewhat triangular, unequally mucronato-dentate, niveo-tomentose beneath. Lobes of Base diverging, somewhat acute. Stigmas of complete Flts. lineari-lanceolate, acuminate. **p.** 4, 5. *Mountains.* Jura Alps. ✓

462. NARDOSMIA.

1. **fragrans.** L. appearing with the flower, cordato-orbicular. Phyll. acute, equalling or exceeding disc. **p.** 10, 11 (2, 3, Guss.). Dau. Pyr. Nap. Sic. Sard.

463. TUSSILAGO.

1. **Farfara.** Stalks 1-flowered, with scaly bracts. L. heart-shaped, angular and toothed. **p.** 3, 4. *Moist.* ✓

464. ADENOSTYLES.

1. **albifrons.** L. reniformi-cordate, coarsely and unequally duplicato-dentate, somewhat tomentose beneath. Flts. 3–6, Koch. **p.** 7, 8. *Woody mountains.* m. Eur. ✓

2. **alpina.** L. reniformi-cordate, nearly equally dentato-crenate, downy (only) on the veins beneath. Flts. 3–6, Koch. **p.** 7, 8. *Mountain meadows.* m. and s. Eur. ✓

3. **leucophylla.** L. reniformi-cordate, nearly equally dentate, tomentose on both sides. Flts. 12–20, Koch. **p.** 8. *Very high pastures.* w. Alps. ✓

4. **hybrida.** L. cordate, dentate, nearly smooth above, webby beneath. Corymb lax. Phyll. downy on the back. Flts. 12–18. **p.** 8. *Mountain pastures.* Vall. Rhætian Alps. Nebrodes. *Perhaps a var. of* leucophylla. *All the species vary in having or wanting Appendages to the L.-stalk.*

465. EUPATORIUM.

1. **cannabinum.** Flts. 5–6. Phyll. about 10, in two series; the outer very short and blunt. L. in 3 or 5 deep, lanceolate segments. **p.** 7, 8. *Wet.* ✓

β. L. undivided.

Sub-order III. DISCOIDEÆ.

Tribe I. *ARTEMISIEÆ.*

466. COTULA.

1. **coronopifolia.** L. sheathing at base, lanceolato-linear, pinnatifido-dentate. Stem procumbent. Branches 1-flowered. **a.** 7, 8. *Sea-shore* from Embden to Holstein.

467. ARTEMISIA.

A. Florets all complete. Receptacle naked. Sp. 1–4.

B. Outer Florets without anthers. Receptacle naked.

- **i.** L.-stalk auricled.
  - **a.** Flower subglobose, hairless. Sp. 5–11.
  - **b.** Flower subglobose, hoary. Sp. 12–14.
  - **c.** Flower oblong. Sp. 15.
- **ii.** L.-stalk without auricles. Sp. 16–21.

C. Outer Flts. without anthers. Receptacle hairy.

- **i.** Corolla hairy. Sp. 22, 23.
- **ii.** Corolla without hairs. Sp. 24–30.

A. *Florets all complete. Receptacle naked.*

1. **cærulescens.** L. of the barren stalks incise and pinnatifid; others lanceolate and undivided. Fl. oblong. Flts. about 3. **S.** 8, 9. *Marshy shores.* Adr.

2. **densiflora.** L. pinnate, on long, rigid stalks; those on mid-stem auricled. Primary Div. entire in the lower part. Floral L. trifid or entire. Segm. of all linear, obtuse. Fl. oblongo-turbinate. **s.S.** Cors.—Viv.

3. **narbonensis,** J. W. L. pinnate, divided in their whole length. Segm. short, rounded. Floral L. trifid. Fl. ovali-oblong. **s.S.** 7, 8. *Salt marshes.* Narbonne.

4. **maritima.** L. decompound. Primary Segm. divided almost from base. Div. lanceolate. **s.S.** 8, 9.

α. Branches deflexed. *Salt marshes.*

β. *salina.* Branches erect. Fl. cernuous. *Salt springs.* G.

γ. *gallica.* Branches erect, numerous, falling far short of central raceme. Fl. erect. *Salt marshes.*

δ. *vallesiaca.* Branches erect, few, all nearly equal. Fl. erect. Vallais.

I cannot persuade myself that all the forms called *A. maritima* belong to one species. Besides the erect, recurved, or deflexed branches, they vary in the ovoid (rather obovoid) or almost globular florets, which are stalked or sessile, clustered or solitary, erect or cernuous. The floral L. are entire or trifid, exceeding or falling short of the flower. The L. are bi- or even tri-ternate or pinnate: the pinnæ sessile or stalked, pinnate or palmato-multifid. The ultimate segments are, I believe, always linear and obtuse. The stem or branches of the plant sometimes end in a long spike or raceme, and sometimes are divided into a panicle. The outline of the L. is sometimes oblong, and sometimes reniform.

B. *Outer Florets without anthers. Receptacle naked.*

i. *An Auricle at the base of L.-stalk about the middle of the flowering-stem.*

a. *Flower broadly ovoid or subglobose, hairless.*

5. **variabilis.** Shrubby. Lower L. bipinnate. Middle L. tripartite: the middle segment pinnate, with distant Lts. Ultimate Segm. and floral L. long, filiform, spreading. **s.S.** 8, 9. *Open dry.* K. Nap. Sic.

β. *saligna.* Hoary at base. Segm. of L. shorter.

6. **campestris.** Woody at base. Barren Stems tufted. Lower L. bipinnate; middle with 5–7 nearly equal, linear, mucronate segments. Middle Segm. pinnate. *Fl. small.* **s.S.** or **p.** 7, 8. *Barren.* Fr. G. Sw.

β. *nana.* 3–6 inches high. Segm. of L. lineari-lanceolate. (L. 2–3-pinnatifid; the outline subrotundo-ovate. Segm. linear, mucronate.—Koch.)

The divisions of the L. are exceedingly various, but the segments are always capillary and acute. A. Abrotanum *and* A. camphorata *have similar L.; but the first has a fully hemispherical Fl., while* A. campestris *has usually only* 3–5 *Flts., and hardly, therefore, a disc and circumference. The Fl. are in racemes, generally secund and somewhat ovoid, but sometimes nearly globular.* A. camphorata *has a hairy receptacle.*

7. **paniculata.** Shrubby. L. bipinnate: those of branches pinnate at top. Segm. and floral L. linear, short and straight. Bracts tiled, fleshy, obtuse. **s.S.** It. s. Fr. *According to Guss., the Fl. is oblong.*

8. **glutinosa.** Shrubby, viscid, especially at top. Lower L. bipinnate; middle 7-cleft. Auricle 3-cleft. Middle Segm. pinnato-trisect or undivided. Ultimate Segm. and floral

L. linear, falcate. Fl. somewhat clustered. **s.S.** *Sandy shores.* Narb. Mtp.

✓ 9. **crithmifolia.** Woody at base, somewhat viscid at top. L. fleshy, pinnate. Stem-L. somewhat trifid. All Segm. lineari-lanceolate, divaricate. **s.S.** or **p.** 8. *Sandy shores.* Bay of Biscay.

✓ 10. **nana.** Herbaceous, tufted. (Stems simple, Gau.) L. silky, bipinnatipartite, on long stalks. Segm. and sessile floral L. lanceolate. Fl. nodding, nearly globose. **p.** 7, 8. *High valleys.* Sars, Sw.

11. **scoparia.** Stem simple, erect. Pan. spreading. L. bi- tripinnatifid: outline ovate. Segm. of the lowest L. lineari-lanceolate; of the rest linear. Upper L. sessile, simply pinnatifid; uppermost undivided or with a tooth at base. Outer Phyll. shorter. **a.** 7, 8. *Sandy hills.* Boh. lower Aust. *The greater fineness and delicacy of all the parts, the shorter racemes, and longer stalks, distinguish this from* A. campestris.

b. *Flower ovoid or nearly globose, hoary.*

✓ 12. **chamæmilifolia.** Shrubby, erect. L. nearly smooth. Lower L. tripinnate; upper bipinnate. Segm. linear. Phyll. quite smooth, nearly of equal length; outer linear; inner obtuse, transparent at top. Cor. hairless. **s.S.** *Open rocks.* Dau. Pdm.

✓ 13. **pontica.** Root creeping. Stem erect. Lower L. interruptedly bi- tripinnate. Segm. linear. (Stalk of lower stem-L. auricled, Koch.) Fl. subglobose, small, nodding. Pan. rod-like. Outer Phyll. lanceolate, shorter than the inner. Cor. hairless. **s.S.** or **p.** 7, 8. *Open hills.* G. Sw. s. Fr.

✓ 14. **austriaca.** Root creeping. Plant silky. Stem erect. Lower L. pinnate, multifid; upper tripartite and simple. Segm. linear. Fl. panicled, ovate, oblong or globose, somewhat nodding. Cor. pubescent. **s.S.** or **p.** 8, 9. *Open hills.* lower Aust.

c. *Flower oblong.*

✓ 15. **vulgaris.** Herbaceous, erect. L. white beneath, pinnatifid. Segm. lanceolate, incise; uppermost undivided. Pan. leafy, spreading. Outer Phyll. tomentose. **p.** 8, 9. *Uncult.*

ii. *No Auricles to the lower L.-stalk.*

16. **laciniata.** Barren Stems tufted; fertile ascending, simple. L. bipinnatifid, toothed. Segm. and Teeth lanceolate, acuminate, mucronate; upper undivided. Branches erect, racemose. Fl. nodding. All Phyll. ovate, with scariose margin; outer shorter. Flts. about 20. **p.** 7, 8. *Calc. pastures.* Mansfeld in upper Sax.

17. **tanacetifolia.** Barren Stems tufted; fertile ascending, simple. L. bipinnatifid, toothed. Segm. and Teeth lanceolate, acuminate, mucronate; upper undivided. Rac. nearly simple, nodding. All Phyll. ovate, with scariose margin; outer shorter. Flts. about 40. **p.** 7, 8. *Very high.* Mont Lauteret in Dau. Pdm. Mount Moroseh in Carn.

18. **insipida.** Lower L. bipinnatifid; upper simply pinnatifid. Segm. lanceolate, acuminate, inciso-serrate. Rac. branched, small, nodding. Phyll. nearly round. Margin scariose. **p.** 7. *Woods.* Baux in Dau.

19. **Abrotanum.** Stem shrubby, erect, panicled. Lower L. bipinnate; upper simply pinnate. Segm. and floral L. lineari-filiform. Fl. hemispherical, nodding. Outer Phyll. hoary, lanceolate, acute. **s.S.** 9. Sitten, Vallais. Trieste. Vicenza. Mtp.?

20. **procera.** Shrubby, erect. All L. bi- tripinnate. Segm. and floral L. lineari-filiform. Panicle of simple, straight racemes. Phyll. ovato-lanceolate: inner fringed. Cor. hoary. **s.S.** It.

21. **spicata.** Barren Stems tufted. Flowering-stems ascending, simple. Lower L. digitate, multifid. Segm. lineari-lanceolate, somewhat obtuse. Middle L. pinnatifid; upper simple or ending in 3 teeth. Phyll. tomentose, with scariose margin. **p.** 7, 8. *High rocks.* s. Alps. Pyr. Apenn.

β. eriantha. All upper L. undivided. K. Naples.

C. *Outer Florets without anthers. Receptacle hairy.*

i. *Corolla hairy.*

22. **lanata.** Barren Stems tufted. Flowering-stems ascending, simple. L. silky. Lower L. stalked, ternate or digitato-multifid; upper pinnatifid. Fl. globose, racemose, nodding. Phyll. woolly; outer few, linear, leafy. Flts. 20–30, woolly at top. **p.** 7, 8. *Very high rocks.* It. s. Tyr.

β. pedemontana. Heads crowded in the axil, forming a compound spike. Mountains of Schlehern and of Fassa in Tyr. Val Maera, Pdm.

γ. nitida. Spike simple. Stems decumbent. Mountains of Carrara.

23. **mutellina.** Barren Stems tufted.

Flowering-stems ascending, simple. L. silky; lower tripartito-multifid. Segm. linear; upper somewhat digitate: the stalk often auricled. Fl. subrotundo-turbinate. Phyll. tomentose, oblong. Flts. 15. Cor. hairy at top. **p.** 7, 8. *Very high open rocks.* Alps. Pyr.

ii. *Corolla without hairs.*

24. **glacialis.** Barren Stems tufted. Flowering-stems ascending, quite simple. L. silky; lower tripartito-multifid. Segm. linear; upper somewhat digitate: the stalk often auricled. Fl. large, globose, erect, crowded. Phyll. oblong, tomentose. Flts. 30–40. Cor. hairless. **p.** 7, 8. *Snowy, very high.* Alps. Dau. Pdm. Sar. Sw.

25. **rupestris.** Barren Stems tufted. Flowering-stems ascending, simple. L. hairless: lower bipinnate, stalked; upper pectinato-pinnatifid. Fl. large, globose, cernuous, racemose or panicled, Koch. Outer Phyll. lax, numerous, equal. Flts. 50–60. Cor. hairless. **p.** 7. "*Solo sterilissimo calcareo salito.*" Stassfurth. Bernburg and Borksleben, upper Sax.

26. **camphorata.** Shrubby. Barren Stems decumbent. Flowering-stems ascending. L. tomentoso-canescent; all on auricled stalks; lower bipinnate. Segm. lineari-filiform. Floral L. entire. Fl. in a rod-like panicle, globose, nodding. Phyll. tomentose: outer few, linear, leaf-like, shorter than disc; inner oval, with a white membranous margin. (Hairs of Recept. few, curled, Koch.) **p.** 9, 10. *Calc. stony.* Colmar in Alsace. s. Tyr. s. Carn. Dau. Prov. Lang. Sicily.

27. **achilleifolia.** Stems tufted, woody. Lower L. and those of barren stems tripinnate. Lts. lanceolato-linear. Floral L. undivided. Rac. long, spreading. Fl. hemispherical, nodding. Phyll. hoary. *Plant green, with a very sweet smell.* **w.** *Rocky.* Monte Gargano.

28. **Absinthium.** Erect. L. silky; lower tripinnatifid. Segm. lanceolate, somewhat dentate, oblong, without auricles. Floral L. undivided. Fl. subglobose, nodding. Outer Phyll. linear, lax, somewhat silky; inner rounded, scariose, nearly hairless. **p.** 7, 8. *Stony. Rare in* Ger.

29. **arborescens.** Shrubby, erect. L. silky, tripinnate. Segm. linear. Stalks not auricled. Floral L. undivided. Fl. large, globose, cernuous, afterwards erect, in a panicled raceme. Phyll. oval, pubescent at base, scariose and shining at top. Cor. hairless. **s.S.** *Open stony.* Hyères. It. Sic.

30. **argentea.** Shrubby, erect. L. silky, bipinnate. Segm. linear or lanceolate, without auricles. Floral L. undivided. Phyll. all tomentose to the top. Fl. globose, cernuous, in a panicled raceme. Cor. hairless. **s.S.** *Marit. rocks.* Palermo. *Not noticed by Gussone.*

468. CARPESIUM.

1. **cernuum.** Fl. solitary, terminal, cernuous. Outer Phyll. patulo-reflexed. Stalks with leafy bracts. L. elliptic, dentate. **p.** DC. **a.** Koch. 7, 8. *Moist valleys.* Dau. Vall. s. Alps.

2. **abrotanoides.** Fl. axillary, secund, on short, naked stalks. Phyll. adpressed. Stem-L. oblongo-lanceolate, attenuate at each end, nearly entire. **p.** DC. **a.** Koch. *Woods in a rich soil.* Aquileïa. Monfalcone. *The flowers have the appearance of being in a raceme, but the upper ones open first.*

469. MICROPUS.

A. *Phyllaries involving seeds, prickly on back.*

1. **supinus.** Covered with silky wool. L. spatulate. Fl. axillary, not much clustered. **a.** *Dry coasts.* Prov. Nice.

B. *Phyllaries involving seeds, woolly, unarmed.*

2. **erectus.** Covered with white wool. L. oblongo-lanceolate, obtuse. Fl. axillary and terminal, clustered. Phyll. convex, scantily woolly. **a.** 6, 7. *Barren, open, and dried splashes.* Etampes. Mdt.

3. **bombycinus.** Covered with white wool. L. lineari-oblong, obtuse. Fl. axillary and terminal, crowded. Phyll. convex, floccose. **a.** *Dry hills.* Lang. *Var. of preceding?*

470. EVAX.

1. **pygmæa.** Fl. in a dense umbel. Bracts radiating round umbel. L. spatulate, or lineari-oblong. Phyll. and Pales acuminate. Seeds rough. Scales of Recept. aristato-acuminate. **a.** 5, 6. *Open marit. rocks.* Mdt.

2. **asterisciflora.** Fl. in a dense umbel. Bracts radiating round umbel. L. lineari-oblong. Floral L. much exceeding umbel. Phyll. and Pales acuminate. Seeds with a double beard! Chaff aristato-acuminate. **a.** 5, 6. *Open and rocky.* Sard. Sic. Calab.

3. **rotundata.** L. shortly spatulate or obovato-cuneate, equalling or slightly exceeding flowers. Phyll. with a short acumen. Inner

Pales somewhat obtuse. Seeds smooth. **a.** 5, 6. *Sandy shores.* La Maddalena and S. Maria, Sardinia.

4. **discolor.** Fl. mixed with irregularly disposed bracts. L. obovato-lanceolate. Floral L. hardly exceeding calyx. Fl. crowded, surrounded by loose wool. Chaff obtuse, papery (lacerate, Guss.). **a.** 7. *Sandy splashes.* Nebrodes.

5. **Heldreichii.** "White, woolly. Stem simple, very short, 1-flowered, or with a few ascending branches from under the central, sessile head. L. obovato-spatulate: inner shorter than flower. Phyll. of one colour: outer acute; inner dilated at top and truncate. **a.** 5, 6. *Calc. hills.* Pietra Facile."—Guss.

6. **exigua.** "Grey, woolly. Stem short, forked, erect. Side Branches numerous, decumbent or ascending. L. spatulato-linear; upper exceeding flowers. Fl. crowded, terminal and in the forks. Flts. numerous. Phyll. concave, keeled; outer acuminate, the base covered with wool, the tips of a yellowish green, smooth and shining; the inner obtuse. **a.** 4, 5. *Dry hills.*" Sic.—Guss.

7. **tenuifolia.** "Grey, tomentose. Stems slender, filiform, much branched. L. narrow, lineari-spatulate. Fl. woolly, terminal and approximate on the sides of the branches. Outer Phyll. awned; inner somewhat acute. **a.** 4, 5. *Barren calc.* Lampedusa."—Guss.

Tribe II. *GNAPHALIEÆ.*

471. FILAGO.

A. *Phyllaries concave, but not inclosing the seeds.*

i. *Outer Phyllaries tapering into a slender awn.*

1. **pyramidata.** Heads hemispherical or depressedly globose, exceeded by the leafy involucrum. Fl. 10–18, ovoideo-pyramidal, with 5 marked angles and concave sides, not wholly imbedded in thick wool. Innermost scales obtuse; the nerve evanescent. All L. somewhat broader above the middle. **a.** 7–10. *Fields.*

2. **prostrata.** "Stems short, prostrate, somewhat dichotomous at top. L. lineari-oblong or spatulate, cano-tomentose. Heads globose, crowded, approximate. Outer Scales acuminate with a scariose point. Awns reflexed. Inner Scales obtuse, often with a little point. (All the Scales acuminato-aristate, somewhat divaricate, Guss.) **a.** 5, 6. *Dry hills.* Sic. Lucania."—Parl.

3. **apiculata.** Heads subglobose, usually equalled by 2 or 3 L. of the involucrum. Fl. 20–25, ovoid, somewhat pentagonal, half buried in wool. All the Scales acuminate with an excurrent *red* nerve. (Plant covered with a yellowish wool, Jord.) Lower L. more or less spatulate, apiculate. Floral L. often ovate; upper oblong. **a.** 6, 7. *Sandy fields.*

4. **germanica.** Heads globose, rarely accompanied with a single floral L. Fl. ovoid, 30–40, imbedded in thick wool. All the Scales acuminate with an excurrent nerve. Lower L. linear, hardly or not at all widened above; upper somewhat widened near the base, acute. **a.** 5–7. *Fields.*

5. **eriocephala.** Heads globose or somewhat prolonged, without involucrum. Fl. 40–60, ovoid, imbedded in thick wool. All the Scales with excurrent nerve. L. tiled, more or less ovate, prolonged, acute; upper sometimes almost linear. **a.** 6. *Dry gravel or sand.* Hyères. Ponte Galera. Sic

ii. *Phyllaries not awned.*

6. **arvensis.** Heads of Fl. in a pyramidal panicle; the central stem often ending in a raceme or spike. Outer Phyll. linear, very narrow. **a.** 7, 8. *Sandy fields.* m. and s. Europe.

7. **heterantha.** "Stem erect, simple or branched. Branches long. L. linear, tomentose. Heads solitary, axillary and terminal, somewhat spiked, sessile and stalked. Phyll. acute, stellate when in fruit. **a.** 5, 6. *Dry fields.* Sic."—Parl.

8. **Lagopus.** "Stem erect, nearly simple. L. softly tomentose. Heads solitary or in small clusters, axillary and terminal. **a.** 6, 7. *Open sandy.* Sic."—Parl. *To judge from the descriptions, this and Sp. 7 are varieties of* F. arvensis. *Gussone* (*who has no* arvensis) *adopts them.*

iii. *Calyx calycled! without awns.*

9. **minima.** Dichotomous. L. lineari-lanceolate, shorter than heads. Head lax, of 3–7 pyramidal flowers, terminal and at the forks of stem, as long or longer than floral L. Outer Phyll. ovate; inner tomentose at base, smooth and scariose at top. **a.** 6–9. *Barren.*

10. **neglecta.** "Branched, somewhat dichotomous. L. lineari-lanceolate; uppermost crowded, exceeding flowers. Heads lax, of 2–4

ovoid (not angular) flowers. Phyll. smooth at top and brown, somewhat acute. **a.** *Fields.* Badcuvilliers in Lorr."—DC.

B. *Outer Florets imbedded in the thickened base of the phyllaries!*

11. **tenuifolia.** " Stem erect, ramoso-dichotomous at top. Branches divaricate. L. narrow linear, acute: upper bract-like, recurved. Heads 6–10-flowered, sessile and terminal, woolly. Phyll. obtuse. **a.** 4, 5. *Dry sandy hills.* Sic."—Parl.

12. **gallica.** Branched, dichotomous above. L. linear, acute. Margin somewhat revolute, much exceeding heads. Heads lax, of 3–5 pyramidal flowers, at the forks and terminal. Outer Phyll. ovate. **a.** 5, 6. *Dry fields.* G. *occ.* Fr. It. ✓

472. GNAPHALIUM.

A. *Flowers complete. Shafts of Crest filiform, or nearly so.*

1. **luteo-album.** Fl. in a crowded, leafless corymb. L. oblong, cottony on both sides: those on stem somewhat amplexicaul. Phyll. scariose. *Straw-coloured.* **a.** 6. *Barren sandy.* m. and s. Eur. ✓

2. **uliginosum.** Stem branched, diffuse. Heads of Fl. leafy. L. linear, attenuate. Phyll. scariose, brown. Seeds smooth. **a.** 7–9. *Plashes. Koch considers* G. nudum *a var. of this. DC. puts it with* G. pillulare, *a Lapland plant, with muriculate seeds.* ✓

3. **sylvaticum.** Stem simple, ending in a compound spike. L. lanceolate, very attenuate, with a callous, nearly naked, obtuse mucro. Outer Phyll. about one-third of length of flowers. **p.** 7, 8. *Woods and heaths. The genuine plant, according to Koch, has the L. on stem gradually decreasing.* ✓

β. *norvegicum.* L. on middle of stalk as long as those below, acuminato-mucronate. ✓

γ. *hoppeanum.* Differs from β in having L. simply acute.

All these characters differ very much in degree.

4. **supinum.** Shoots creeping, densely cespitose. Fl. few (1–8), in a capitate spike, sometimes solitary. Outer Phyll. nearly as long as flowers. **p.** 7, 8. *Moist, stony, high mountains. Bab. distinguishes* supinum, *in which the stems are not cespitose, and the flowers are in heads, from* pusillum, *which is cespitose, and has scattered flowers. I do not find these characters go together:* pusillum *of Gaudin has the stem shorter than L.* ✓

B. *Flowers complete. Shafts of Crests in the disc club-shaped.*

5. **Leontopodium.** Stem simple. Heads in a crowded corymb, surrounded by a large leafy involucrum, densely woolly. **p.** 7, 8. *High pastures.* Alps. Pyr. ✓

C. *Flowers separate on different plants.*

i. *Shafts club-shaped.*

6. **dioicum.** Plant with creeping runners. L. obovato-spatulate, cottony beneath: those on stem nearly all equal. Phyll. of fertile flowers obtuse, coloured. **p.** 5, 6. *Heaths and dry hills.* ✓

7. **alpinum.** Runners few or 0. L. obovato-spatulate, cottony beneath: those of stem nearly all equal. Phyll. of fertile flowers acuminate, somewhat serrate, lurido-fuscous. **p.** *Very high pastures.* Dau. Pyr.

8. **carpathicum.** No runners. Stem quite simple. Fl. erect. L. lanceolate: upper gradually smaller. Phyll. sphacelate, scariose: inner acuminate. **p.** 7, 8. *High moist rocks.* Alps. ✓

ii. *Shafts hardly clavate.*

9. **margaritaceum.** Branched, erect. L. lineari-lanceolate, cottony beneath. Fl. in a level-topped corymb, yellowish. Phyll. white, obtuse. **p.** 8. *Moist meadows.* Monmouthshire. ✓

473. HELICHRYSUM.

A. *Phyllaries white, obtuse, radiate.*

1. **frigidum.** Tufted, procumbent, hoary. L. oblong, sessile, tiled: those on the shoots nearly in 4 rows. Fl. solitary, terminal. Seeds very silky. **p.** *Very high.* Cors. ✓

B. *Phyllaries yellow. Flowers in a corymb.*

2. **scandens.** " Shrubby. Fl. ovate, at last campanulate. L. lineari-lanceolate, flat, at last revolute, acute. *Plant loosely tufted, hanging from the rocks.* **w.** 5, 6. *Rocks exposed to south.* Cassaro and Ferla in Sic."—Guss.

3. **glutinosum.** Shrubby. Fl. globoso-turbinate. L. linear. Margin revolute. Corymb flat at top, glutinous. **w.** *Sandy shores.* Viesti and Peschici in Apulia.

4. **Stœchas.** Shrubby. Fl. globoso-tur- ✓

binate. L. linear. Margin revolute. Corymb subglobose. Phyll. somewhat lax. **w.** 5–7. *Dry sand and maritime rocks.* w. Fr. Abr. *I refer to this* H. nebrodense, Guss., *and also* stramineum *and* pendulum; *the two latter of which have the lower L. somewhat wider and lineari-lanceolate.*

✓ 5. **angustifolium.** Fl. oblongo-turbinate. L. linear. Margin revolute. Corymb subglobose. Phyll. closely tiled. **w.** 5–7. *Dry rocky.* s. Fr. adr. G. It.

I include in this *microphyllum*, of which the outer phyllaries are woolly, *panormitanum*, *cæspitosum*, *littoreum*, and *italicum*, of Guss. *H. rupestre* is distinguished by DC. as having subglobose flowers; by Guss., as having them oblong, and at last cylindrical; yet in his observations on *Stœchas*, under *italicum*, he refers to *rupestre* as having globose flowers. I do not know where to put that or the *saxatile* of Moris. Some of the plants here grouped together may perhaps be distinct species, but I have found myself unable, after a laborious investigation, to elaborate from the different descriptions any characters by which it would be possible for the student to identify them.

✓ 6. **arenarium.** Stem herbaceous, erect, simple. L. flat: lower obovato-oblong; upper lanceolato-linear. Corymb compound. Phyll. oblong, obtuse, *yellow or orange.* **p.** 7, 8. *Sandy.* G. Als.

474. CONYZA.

A. *Florets of Disc barren.* Conyza, DC. *Crest much exceeding seed.*

✓ 1. **ambigua.** Stem erect, branched, panicled, herbaceous. L. linear, sessile, nearly or quite entire. Fl. stalked. Phyll. linear, acuminate, as long as the disc. **a.** 6–9. *Meadows and uncult.* Lang. Pisa. Rome. Nap. Sard.

2. **ægyptiaca.** Stem erect, terete, herbaceous. L. oblongo-spatulate, coarsely toothed for the whole length. Fl. somewhat panicled, globose. Phyll. linear, acuminate. Seeds compressed. **a.** *Found in Sic., according to* Pers.

B. *Florets of Disc fertile.* Phagnalon, DC. *Base shrubby. Stalks leafless.*

✓ 3. **sordida.** Fl. sessile, ovato-cylindrical, 1–3 together. Phyll. ovate, scariose, somewhat blunt. L. linear, quite entire, tomentose on both sides. Margin revolute.

✓ 4. **saxatilis.** Fl. campanulate, solitary. Phyll. nearly linear: outer woolly; inner more acute, somewhat squarrose at top. Lower L. oblongo-lanceolate, somewhat dentate; upper linear, webby above. **w.** 4–6. *Rocks and walls.* Coasts of Mdt.

β. intermedia. L. somewhat adnato-amplexicaul. Phyll. less acute, but not obtuse.

5. **calycina.** "Fl. campanulate. Stalks 1-flowered. Outer Phyll. ovate. L. not undulate, entire: lower narrow, lineari-lanceolate; upper linear, with revolute margin. **w.** 4–6. *Open rocks.* Iglesia in Sard."—Moris.

6. **rupestris.** Fl. somewhat campanulate. Stalks 1-flowered, often in pairs. Phyll. smooth, obtuse, adpressed. L. adnato-amplexicaul: lower spatulato-oblong; upper lanceolate, acute, somewhat undulate, webby above, tomentose beneath. **w.** 5, 6. *Calc. rocks.* Nap. Sic. Sard. ✓

Sub-order IV. CYNAREÆ.

Tribe I. *ECHINOPSIDEÆ.*

475. ECHINOPS.

A. *Shafts of Crest united almost to the top.*

1. **exaltatus.** L. pinnatifid, with scattered bristles above, cottony beneath. Phyll. smooth on back, more than twice as long as surrounding bristles. **p.** 7, 8. *Woods.* Trieste.

B. *Shafts of Crest connected only at base.*

2. **Ritro.** L. pinnatifid, smooth or only webby above, cottony beneath. Phyll. smooth on back, more than twice as long as surrounding bristles. **p.** 7, 8. *Open stony.* mdt. Eur. ✓

3. **sphærocephalus.** L. pinnatifid, with somewhat viscid hairs above, cottony beneath. Phyll. with glandular hairs, not twice as long as surrounding bristles. **p.** 7, 8. *Stony.* s. and m. Eur. *occ.* ✓

4. **ruthenicus.** "L. smooth above. Margin spinulose. Root-L. pinnatifid. Segm. and middle stem-L. serrato-lobate. Lobes and uppermost L. sinuato-dentate; each lobe ending in a strong spine. Cal. three times as long as surrounding bristles. Phyll. ciliate above the middle. Ciliæ rough, shorter than the terminating mucro. **p.** 6, 7. *Stony woods.* Sic."—Guss.

5. **viscosus.** L. pinnatifid, with viscid hairs above, cottony beneath. Phyll. smooth, acuminate, more than twice as long as sur-

rounding bristles. **p.** 6, 7. *Coast.* Milazzo. Lampedusa.

Tribe II. *CARDUINEÆ.*

476. BERARDIA.

1. **subaculis.** L. in rosettes, stalked, ovate, crenato-dentate, everywhere woolly. **p.** 7. *High, open, slaty gravel.* w. Alps.

477. SERRATULA.

A. *Crest surrounding top of Seed.*

1. **tinctoria.** Somewhat diœcious. L. smooth, oblong, entire or pinnatifid, acutely serrate. Fl. oblong, in a corymb. Phyll. ovato-lanceolate, adpressed. **p.** *Meadows and open woods.*

β. pumila. All L. pinnatifid.

γ. integrifolia.

2. **heterophylla.** Flts. all complete. L. rough. Root-L. ovate, on long stalks. Stem-L. few, oblong, inciso-serrate; upper linear, entire. Stem simple, 1-flowered. Outer Phyll. ovato-lanceolate, hardly mucronulate. **p.** 6, 7. *Mountains.* Dau. Vienna. Istr.

α. Phyll. mucronate.

β. nitida. Phyll. without a mucro.

3. **radiata.** L. rough with hairs, pectinato-pinnatifid. Div. lanceolate. Stem simple, or with a few 1-flowered branches. Fl. nearly globose. Phyll. mucronato-spinescent. **p.** 6, 7. *Dry calc.* Burkersdorf near Vienna. Istr.

4. **nudicaulis.** Fl. and Flts. all complete. L. smooth. Root-L. on short stalks, quite entire. Stem-L. very few, oblong, dentate. Stem 1-flowered. Outer Phyll. lanceolate, acuminato-subspinose; inner with dilated scariose tip. **p.** 6, 7. *Open hills.* Mt. St. Victoire, Prov. s. Dau. Valle Pesiana in Pdm. Salève.

B. *Crest on an umbo within the tip of the seed.* Jurinea.

5. **cyanoides.** L. webby above, pinnatipartite, with linear, entire segments. Margin revolute. Stem few-flowered. Phyll. spreading, tomentose. (Seeds somewhat pitted, Koch.) *One or two of the Shafts of the Crest much longer than the others.* **p.** 7, 8. *Sandy.* Rhine, about Mannheim, &c.

6. **mollis.** Root-L. pectinato-pinnatifid, villous above. Segm. oblongo-linear, quite entire. Margin revolute. Stem 1- or few-flowered, naked at top. Phyll. squarrose, with a woolly web: inner erect, with revolute margin. Seeds pitted (lamellato-plicate, Koch.) **p.** 5, 6. *Open.* s. e. G. Cev., between Campestre and Salsouz. Benasque in the Pyr.

β. moschata. K. Nap.

7. **humilis.** Root-L. pinnatifid. Segm. oblong, acute, hairless above. Stem 1-flowered, shorter than L. Phyll. lax, nearly hairless. **p.** 6. Near Campestre in Cev. and Port Venasque in Pyr.

β. Bocconi. Segm. of L. obtuse. Madonie.

478. SAUSSUREA.

1. **pygmæa.** Phyll. acuminate, lax. Stem 1-flowered. L. mostly crowded on the head of root, sessile, linear, hirsute beneath. **p.** 7, 8. *High calc.* Aust. Styr. Carn.

2. **discolor.** Phyll. adpressed. Fl. in a compact corymb. L. white beneath, acuminate: lower stalked, cordato-lanceolate; upper nearly sessile, oblongo-lanceolate, quite entire. **p.** 7, 8. *Very high granite rocks.* Central Alps.

3. **alpina.** Phyll. villous, adpressed. Fl. in a compact corymb. L. flat, webbed beneath. Root-L. ovato-lanceolate, somewhat dentate; upper oblongo-lanceolate, entire. **p.** 7, 8. *High meadows.* Alps. Pyr.

479. STÆHELINA.

1. **dubia.** Shafts of Crest smooth. Seeds smooth. Fl. naked. Tube of Cor. longer than border. Stem much branched. L. linear, denticulate. **s.S.** 6. *Dry barren.* s. Fr. It.

2. **tenuifolia.** "Stem shrubby, branched at base. Branches erect, tomentose, 3–4-flowered. Fl. ovato-subglobose. Phyll. lanceolate, subulate at top, and cottony. L. linear, revolute, white beneath: the lower crowded."—Guss.

3. **arborescens.** Shafts of Crest hairy. Seeds smooth. Fl. corymbose. Tube of Flt. shorter than border. Stem erect. L. entire, silvery: lower stalked, ovate; upper nearly sessile, longer. **s.S.** *Rocky.* Mt. St. Victoire. Isl. of Hyères?

480. ARCTIUM.

1. **Lappa.** Phyll. nearly smooth, all su-

bulate, hooked, and of one colour. Fl. in a corymb. **b.** 7, 8. *Uncult.*

2. **tomentosum.** Phyll. webby: inner lanceolate, with a straight mucro, coloured, and somewhat radiating. Fl. corymbose. **b.** 7, 8. *Uncult.*

✓ 3. **minus.** Phyll. webby, all subulate and hooked: inner somewhat coloured. Fl. somewhat racemose. **b.** 7. *Uncult.*

These characters are taken from Koch.

481. CARDUUS.

The inner Phyllaries are linear in all the species, generally coloured, 3-nerved, and pubescent at the tip, mostly soft and unarmed; but in some species there is a slight mucro. The L. in all are decurrent, and more or less sinuate and inciso-dentate, with spines on the teeth, which are longer and stronger as they terminate a larger subdivision of the L.

I have put together the species with oblong or cylindrical flowers, but find it impossible to give an analytical view of this genus, or of the next;—in other respects I have copied De Candolle, with an occasional character added from Koch, Gaudin, and Gussone, where I could be sure the same species was intended. The flowers clustered, some of them absolutely sessile, or numerous on short stalks prickly nearly or quite to the summit, or solitary on long stalks, seem to be important characters; but I have not the materials to follow them out.

A. Flowers oblong. Sp. 1–7.
B. Flowers nearly globular, or broadly ovate.
  i. Flowers clustered. Sp. 8–17.
  ii. Flowers nearly solitary. Sp. 18–34.

A. *Flowers oblong.*

✓ 1. **pycnocephalus.** Fl. 2–5, crowded at the end of the nearly leafless branches. Phyll. subulate. Margin spreading, on an ovato-lanceolate base; all mucronate: inner striate. L. sinuate or pinnatifid, webby beneath. **a. b.** 6, 7. *Walls and waste.* Rouen. adr. G. Italy.

2. **neglectus.** "L. oblong, sinuato-spinose, woolly beneath. Stalks cottony, nearly naked. Phyll. hairless, subulato-spinose, spreading, exceeding flowers. **a.** *Borders of fields.* Naples."—Ten. *Fl. solitary; but DC. adds, "or in small clusters." Var. of Sp.* 1?

✓ 3. **tenuiflorus.** Fl. many, crowded at the end of somewhat leafy branches. Phyll. lanceolate, or the outer ovato-lanceolate and somewhat spreading, tapering into a spine; inner striate, erect, finely acute, not always spinescent. L. oblong, sinuato-pinnatifid, webby beneath. **a. b.** 7, 8. *Waste.*

4. **sardous.** Fl. 12–15, crowded at the end of leafy, winged branches. Phyll. subulate, spreading, on a lanceolate base; inner very finely acute. Stem-L. oblong, attenuate, sinuato-pinnatifid, araneo-tomentose beneath, and sometimes above. Segm. palmato-angular. **b.** 5, 6. *Dry hills.* n. Sard. Savona.

5. **congestus.** "Fl. 3–15, crowded, involucrate. Cal. ovato-cylindrical. Phyll. tapering into a spine, spreading at top: inner acute, serrulato-laciniate. L. smooth above, arachnoid beneath, pinnatifid. Div. 2–3-partite, ending in strong spines. Segm. divaricate, subdenticulato-spinulose. **a.** 5, 6. *Woods and hedges.* Bafia and Mandanico, Sic."—Guss.

6. **cephalanthus.** "Root-L. runcinate, squarrose. Stem-L. lanceolate, acuminate, sinuato-pinnatifid, spinose. Stem with many interrupted wings. Fl. crowded, 30–40, cylindrical. Phyll. adpressed: outer lanceolate, woolly, spinose; inner smooth, linear, unarmed. **b.** Isl. of Lavezzi between Cors. and Sard."—Viv. *This and the preceding do not seem well distinguished from* tenuiflorus.

7. **arabicus.** Branches winged to the top. L. lanceolate, sinuato-pinnatifid, with white spots above, tomentose beneath; upper exceeding flowers. Phyll. lineari-lanceolate, erect, flat, with an abrupt, not pungent spine; inner membranous, unarmed. **a. b.** 4, 5. Malta. Sicily.

B. *Flowers ovate or nearly globular.*

i. *Flowers clustered.*

8. **Argyroa.** "Branches woolly, winged to the top. Fl. ovate, somewhat corymbose, on short stalks. L. linear, pinnatifid, dentato-spinose, woolly beneath. Segm. palmato-angular. Phyll. webby, adpressed, terminated by a short spine; inner linear, acuminate, scariose. Flts. 20–30. **a.** 5. *Uncult.* Pal. Sard."—Moris.

9. **Personata.** Fl. 5–8, crowded at the end of leafy and generally winged branches: lateral ✓ ones sessile. Lower L. pinnate or pinnatifid; upper elliptic or ovate, undivided, irregularly serrate: all somewhat webby beneath. Phyll. somewhat serrulate, spreading. **b.** 7, 8. *Mountain valleys.* Alps. Vosges.

10. **Candollii.** Stem nearly simple, winged almost to the top. L. lineari-lanceolate, sinuate, dentato-spinose, lanato-tomentose on both sides, as well as the Stem. Fl. crowded, sessile, ovato-globose. Outer Phyll. webby, made triquetro-subulate at the summit by an elevated nerve, somewhat acute; inner linear, acuminate, straight, membranous. **b.** *Hills.* Prov. *Sandy and waste.* n. It.

11. **confertus.** "Branches long, webby on back, winged to the terminal cluster of 3–5 flowers. L. narrow linear, sinuato-pinnatifid, dentato-spinose, webby below. Flts. 20, *white.* Fl. oval, sessile. Phyll. lanceolate, adpressed, ending in a lax, rigid spine. **b.** 4–6. *Road-sides.* Sard."—Moris.

12. **fasciculiflorus.** "Stem with a few, short, winged branches only at the top. L. lanceolate, sinuato-pinnatifid, dentato-spinose, nearly smooth. Fl. ovate, crowded towards the tops of the branches into a long thyrsus. Phyll. very smooth, lanceolate, shining, produced into a straight spine; inner hardly as long as outer. **b.** 5, 6. *Hills on coast.* Cors. Sard."—Moris.

13. **carlinoides.** White, cottony. Branches winged. L. linear, pinnatifid. Segm. and Teeth ending in strong spines. Fl. crowded, corymbose, obovato-oblong, on short stalks. Phyll. woolly at base, acuminate into spine. **b.** ? 6, 7. *High torrents.* central and e. Pyr. Tende ?

14. **podacanthus.** Branches short, tomentose, winged to the globose and somewhat clustered flowers. L. lanceolate, pinnatifid, dentato-spinose, curled. Phyll. smooth, ending in a rigid, subulate, hardly spreading appendage. **p.** *Mountains.* Dau.

15. **crispus.** "L. lanceolate, tomentose beneath and somewhat villous on the veins, smooth, pinnatifid. Segm. ovate, 3-lobed and toothed. Fl. crowded or solitary. Stalks short, spinose, or naked at the very summit. Seeds with wrinkled striæ. **b.** 7, 8. *Waste.*"—Koch. *This seems to be the plant more commonly known in England as* C. acanthoides.

16. **acanthoides.** "L. hairless or only villous on the veins beneath, pinnatipartite. Segm. ovate, somewhat palmato-trifid. Fl. subrotund, nearly solitary, on short spinose stalks. Seeds finely wrinkled. **b.** 7, 8. *Waste.*" —Koch.

17. **polyanthemus.** "L. villous on the veins beneath, or araneo-lanate, pinnatipartite. Segm. ovate, somewhat palmato-trifid. Fl. ovate, 3 or 5 together, on short spinose stalks. Seeds very finely striate. **b.** 7, 8. *Waste.* Jura. Trèves."—Koch. *I have copied Koch's characters of these three species, which seem hardly different. The last rests exclusively in the seeds.*

ii. *Flowers nearly solitary.*

18. **affinis.** Stem slender at base and branched at top, tomentose, not winged. L. lanceolate, pinnatifid, tomentose beneath. Segm. palmato-dentate. Fl. ovato-globose, nearly solitary, erect. Phyll. lineari-subulate, somewhat adpressed; inner longer, membranous, unarmed, acuminate, somewhat coloured. **p.** *Mountains.* Samnium.

19. **corymbosus.** "Branches long, tomentose, hardly winged, 1-flowered. L. lanceolate, webby beneath, sinuato-pinnatifid, dentato-spinose, ciliate. Fl. somewhat corymbose, ovate. Phyll. webby, erect, spinoso-subulate; inner hardly scariose, nearly unarmed. **a.** 5. *Waste.* K. Nap. Sic."—DC.

20. **hamulosus.** "L. araneo-lanate, or nearly smooth beneath, pinnatipartite. Segm. ovate, trifid or lobed. Branches rod-like. Wings gradually decreasing to the naked summit. Fl. solitary. Phyll. linear, on a lanceolate base; inner recurved. **b.** 7, 8. *Waste.* Aust."—Koch.

21. **collinus.** "L. nearly smooth or lanato-tomentose on one or both sides, pinnatipartite. Segm. ovate, trifid and lobed. Branches rod-like. Wings gradually decreasing to the naked summit. Fl. nearly solitary. Phyll. lineari-lanceolate, adpressed or spreading. **b.** 7, 8. *Waste.* adr. G."—Koch.

22. **Argemone.** Stem branched at top. Branches hardly twice as long as the L. L. oblongo-lanceolate, semipinnatifid, spinuloso-dentate, smooth, somewhat glaucous beneath. Fl. erect, globose. Phyll. lineari-subulate, adpressed, webby. Spine short. **b.** 6, 7. *Formerly gathered in the Pyrenees by Pourret. Perhaps a var. of* C. defloratus *or of* C. arctioides.

23. **arctioides.** "L. somewhat webby beneath, at last hairless, pinnatipartite, with elongated terminal lobe. Segm. lanceolate, 2- or 3-lobed on the anterior side. Stalks naked, usually 1-flowered. Phyll. linear, spinulose, mucronate, spreading from the middle. **p.** 8. *Mountains.* s. e. Alps."—Koch.

24. **defloratus.** L. hairless or only hairy on the veins beneath, nearly of one colour, den-

tato-serrate or serrato-lobulate; lowest and uppermost semidecurrent. Lobes bifid. Fl.-stalks long, naked. Phyll. linear, spinuloso-mucronate, spreading from the middle. **p.** 7, 8. *Rocky hills.* Alps.

β. *summanus,* POLL. L. coarsely dentate, spinoso-ciliate.

γ. *crassifolius,* KOCH. L. coarsely dentate. Teeth cloven.

δ. *cirsoides,* VILL. L. smooth, dentate. Lobes bifid.

ε. *rhæticus.* Differs from δ in having strong spines on the L.

ζ. *leptophyllus.* L. narrow.

η. *alpestris.* L. pinnatifid.

25. **tenuifolius.** Branches few, very long, tomentose, 1-flowered. L. lanceolate, undivided, semidecurrent, spinuloso-dentate, hairless, glaucous beneath. Fl. hemispherical, erect. Phyll. linear, obtuse, unarmed, adpressed. **p.** 6, 7. *Meadows.* Basle. Monte Generoso?

26. **laxiflorus.** "L. lanceolate, serrate, spinuloso-ciliate, hirsuto-scabrous on both sides. Stalks long. Fl. cernuous, solitary. Phyll. lineari-subulate, lax. Aust. Alps."—DC., *from* TAUSCH: *not noticed by Koch. It is said closely to resemble* C. defloratus.

27. **acicularis.** L. pinnatifid, dentato-spinulose, villous, hoary beneath. Fl.-stalks naked. Phyll. lineari-aciform (setaceous?), straight, spreading; the outer equalling flowers; inner shorter. **a.** Ravenna.

28. **carlinifolius.** Branches long, tomentose, without wings, 1-flowered. L. lanceolate, pinnatifid. Lobes bifid, dentato-spinose, hairless, glaucous beneath. Fl. subglobose, ✓ erect. Phyll. subulato-spinose at top; inner hardly membranous. **p.** *Moist rough.* Prov. Pyrenees.

29. **platylepis.** "L. villous on veins beneath, pinnatipartite. Segm. ovate, somewhat palmato-trifid, spinuloso-ciliate. Fl. subrotund, erect, solitary, or with an additional sessile horizontal flower. Middle Phyll. somewhat contracted in the middle: base ovate; upper part lanceolate. **b.** 7, 8. *Fields and meadows in high valleys.* Tyrol. Styria."—KOCH.

30. **nigrescens.** Scarcely branched. The Branches winged to the top. L. lanceolate, ✓ sinuato-pinnatifid, dentato-spinose. Fl. cernuous. Cal. hemispherical. Phyll. lanceolato-linear; outer spreading. **b.** 7. *Barren.* s. e. Fr. *Smaller and less branched than* C. nutans.

31. **chrysacanthus.** Somewhat branched at top. Branches short, cottony, winged almost to the end. L. lanceolate, pinnatifid, dentato-spinose, ciliate, smooth, except that the veins underneath are woolly. Fl. globose, nearly solitary. Phyll. webby: outer ending in a somewhat spreading spine; inner membranous, straight, unarmed, coloured. **p.** *Mountain pastures.* Abr. *Spines yellow.*"—DC.

32. **nutans.** "L. villous on veins beneath, pinnatipartite. Segm. ovate, somewhat palmato-trifid. Fl. solitary, subrotund, nodding. ✓ Middle Phyll. contracted in the middle: base ovate; upper part lanceolate, tapering into a refracto-patent spine. **b.** 7, 8. *Dry pastures.*" —KOCH.

33. **macrocephalus.** "Branched. L. lanceolate, sinuate, dentato-spinose. Fl. large, hemispherical, solitary, cernuous. Outer Phyll. ovato-lanceolate, somewhat reflexed: middle ones contracted in the middle. Naples. *Fl. larger than in* C. nutans. *Phyll.* 15 *lines by* 5, *instead of* 10 *by* 2."—DC.

34. **leucographus.** Filaments united! Branches few, long, naked. Lower L. oblong; ✓ upper sinuato-pinnatifid. Fl. solitary. Outer Flts. often unproductive. **a. b.** 5, 6. *Waste.* s. Fr. Osero. It.

Koch notices the following Hybrids :—

1. *acanthoidi-nutans.* Fl. solitary, nodding.
2. *nutanti-acanthoides.* Fl. smaller, erect.
3. *crispo-nutans.*

I omit *agrestis* and *Sanctæ-Balmæ* of DC., as there is no description to identify them.

482. CIRSIUM.

A. L. setoso-scabrous on upper surface.
  i. Stalk about 5-winged. Sp. 1–3.
  ii. Stalk about 2-winged. Sp. 4, 5.
  iii. L. not decurrent. Sp. 6–8.
B. L. not setoso-scabrous.
  i. Fl. accompanied by bracts.
    a. Stalk about 5-winged. Sp. 9, 10.
    b. L. hardly decurrent.
      * Not expanded at base. Sp. 11.
      ** Expanded at base. Sp. 12–17.
  ii. Fl. without bracts.
    a. L. not decurrent.
      * Evidently expanded at base. Sp. 18–22.

** Hardly or not at all expanded at base. Sp. 23–25.

b. L. decurrent, but not to next L. Sp. 26, 27.

c. L. decurrent beyond next L. Sp. 28–30.

A. *L. setoso-scabrous on upper surface.*

i. *Stalk with about* 5 *wings.*

1. **lanceolatum.** Fl. ovate, solitary, webby. Phyll. lineari-lanceolate, spinose; the outer spreading. L. deeply lobed. Segm. 2–3-cleft, with teeth in the sinus. Terminal Lobe prolonged. **b.** 6–9. *Waste.*

β. nemorale. L. less divided and whiter beneath. *Wood* near Leipzig. *Probably a hybrid with* C. pratense.

HYBRIDS.

1. *lanceolato-palustre.* Bracts lanceolate, spinoso-denticulate at base, much shorter than calyx. Phyll. gradually narrowed, keeled, hardly viscid, ending in a slender, yellowish, weak, spreading spine, about one-fifth as long as phyllary. Zürich.—NÆGELI *in* KOCH.

2. *lanceolato-pratense.* L. less decurrent. Stem nearly simple. Paris. Geneva.

3. *lanceolato-acaule.* L. of *C. acaule,* but somewhat decurrent. Fl. of *C. lanceolatum,* but with shorter spines. Savoy.—NÆGELI *in* KOCH.

2. **crinitum.** "Fl. nearly globose, few, at the ends of the branches, somewhat webby. Phyll. narrow, long-acuminate, spinescent, slightly recurved, quite entire. L. webby beneath, pinnatifid. Div. somewhat lobed, ending in strong spines. Narbonne. *Resembles* C. echinatum, *but with decurrent L. Fl. nearly twice as large as in* C. lanceolatum."—DC.

3. **sylvaticum.** Fl. nearly globose, bracteate, stalked, solitary, webby. Phyll. recurved, spreading. L. oblongo-lanceolate, sinuato-pinnatifid, cano-tomentose beneath. Div. somewhat trifid, ciliato-spinulose. **b.** *Moist woods.* Boh. *Not in Koch.*

ii. *L. decurrent, but not beyond the next L.*

4. **giganteum.** L. amplexicaul, slightly adnate. L. smooth above when old, with a white tomentum beneath. Segm. short, obtuse, spinous. Fl. about 3 together, at the ends of the branches. Phyll. lanceolate, acuminato-spinescent, nearly straight. **b.** 7. *Dry hills.* Cal. Sic. Sard.

5. **italicum.** L. webby beneath, not enlarged at base, distinctly pinnatifid. Outline oblong. Inline very narrow linear. Div. small, bifid or simple, with a spine in the sinus. Segm. spinescent. Fl. ovato-oblong. Phyll. lanceolate, spinescent. **b.** 7, 8. *Barren hills.* Italy.

iii. *L. not decurrent.*

6. **ferox.** L. amplexicaul, pinnatifid, with a hoary web; upper crowded about flowers. Fl. broad ovoid. Phyll. subulato-spinose, serrulate, somewhat spreading. **b.** 7, 8. *Uncult.* s. France.

β. Lobelii. Fl. smaller, and woolly. Abr.

7. **echinatum.** L. with a hoary wool, pinnatipartite. Div. divaricate, bilobed. Segm. spinescent. Fl. ovoid, woolly, sessile among the upper L. Phyll. lanceolate, ending in a strong spine: outer somewhat recurved; inner erect. **p.** 7. *Barren fields.* Ste. Lucie, Narbonne. Sic. *Smaller than* C. eriophorum, *and with much stronger spines to the Phyll.*

8. **eriophorum.** L. pinnatipartite. Div. bipartite. Segm. nearly equal, oblong, spinescent. Outline of lower L. lanceolate, attenuate into a spinose stalk. Inline linear. Fl. large, globose, generally very woolly. Phyll. linear, generally obtuse and somewhat enlarged at top, spinescent; outer recurved. **b.** *Dry bushy.*

β. spurium. Fl. smaller, ovate, more numerous. Lake Ticino.

γ. spatulatum, GAUD. Inner Phyll. more evidently spatulate.

Cosson also mentions a var. found at Mont Louis, e. Pyrenees, with a leafy Invol. surrounding each flower.

B. *L. not setoso-scabrous on the upper surface.*

i. *Flowers accompanied by floral L.*

a. *Stalk about* 5-*winged.*

9. **pungens.** "L. lanceolate, pinnatifid, white, cottony, woolly beneath. Div. 2–3-cleft. Segm. and wings (?) ending in a strong spine. Margin serrulato-spinose. Fl. in a crowded raceme. Phyll. ovate, not longer than the straight spreading spine. **p.** 6, 7. *Moist.* Sic."—GUSS.

β. siculum. Phyll. longer than the somewhat recurved spine.

10. **palustre.** L. pinnatifid, pubescent. Div. lanceolate, somewhat incise, dentato-spinose. Fl. crowded, ovato-globose. Phyll. ovato-lanceolate, adpressed, ending in a short mucro. **p.** 7, 8. *Wet meadows.*

HYBRIDS.

1. *palustri-oleraceum* (*parviflorum*, DC.) has the stem and inflorescence of *C. oleraceum*, but with decurrent L.; and the Fl. of *palustre*, but yellowish, with purple styles. Another form differs chiefly from *C. oleraceum* in having L. somewhat decurrent. G. and Sw. *occ.*—Nægeli *in* Koch.

2. *palustri-acaule* differs from *C. acaule* in its linear bracts and decurrent L., more slender spines, which are more numerous at the base of L., webby stalk, and smaller flowers. Near Strasburg.—Nægeli *in* Koch.

b. *L. not decurrent below the next; Stem, therefore, not more than 2-winged.*

* *L. not expanded at the base.*

✓ 11. **arvense.** Stem branched. L. webby beneath, sinuato-pinnatifid. Outline lanceolate. Lobes sinuato-angular; each segm. spinescent. Inline of upper L. linear. Div. undulato-sinuate. Phyll. lanceolate: outer few, somewhat spinescent. Cor. divided to base. **p.** 7–9. *Waste.*

✓ *β. setosum.* L. undivided, or only obtusely sinuate, flat. e. Eur.

HYBRID.

1. *arvensi-palustre* (*Chailleti*, Koch). L. and Inflorescence of *C. palustre.* Fl. and Flts. of *C. arvense. Boggy meadows* below Bruch and Bahrandorf near Vienna. C. Chailleti *of Gaud. belongs to* palustre, Koch.

** *L. expanded and amplexicaul at base. Outer Phyllaries generally spinoso-ciliate at base. Flowers yellow, except in* C. controversum.

✓ 12. **oleraceum.** Fl. sessile, crowded. Phyll. ending in a weak spine. Bracts ovate or cordate, undivided. Lower L. elliptic, sinuate; middle pinnatifid. Segm. ovato-lanceolate. **p.** 7, 8. *Moist meadows and woods.* m. Eur.

HYBRIDS.

1. *lanceolato-oleraceum* (*subalatum*, Gau.). L. semidecurrent, pubescent, somewhat pinnatifid. Segm. divaricate, 2-lobed. Fl. bracteate. Phyll. lanceolate, acuminate, spinescent, spreading. Neufchatel.—Gaud.

2. *oleraceo-arvense* has barren lower branches, as *C. arvense.* The Inflorescence, Bracts, and Phyll. are intermediate. Flts. more like those of *C. oleraceum.*

Another form has no auricles to L., and the bracts are small and lanceolate.—Nægeli *in* Koch.

3. *oleraceo-Erisithales.* L. and Bracts rather of *C. oleraceum.* Inflorescence and Fl. of *C. Erisithales.* It. Sw. Monte Legnone.

Another form differs from *C. oleraceum* in its narrower bracts and wider phyllaries, terminated by a shorter spine.

4. *oleraceo-rivulare* (*erucagineum*, DC.). Fl.-stalks short, furnished with muricate L. Fl. crowded. Bracts lanceolate or lineari-lanceolate, as long as flowers, green. Phyll. terminating in a short spine. *It varies in almost every degree between the two species.* Swabia. Bav. Appenzel. Jura.—Nægeli *in* Koch.

5. *oleraceo-heterophyllum.* L. cordate, amplexicaul, white or webby beneath. Segm. lanceolate, entire on the forward side. Fl. few, crowded. Bracts oblongo-lanceolate, exceeding flowers. Phyll. gradually contracted into a short spine. Boh.

heterophyllo-oleraceum. Lower L. glaucous, and nearly smooth beneath. Fl. somewhat ventricose, crowded. Bracts oblongo-linear, not discoloured, equalling or exceeding the flowers. Phyll. oblong, adpressed, or spreading only at top, ending in a very short spine. Rheinwald.—Nægeli *in* Koch.

6. *oleraceo-bulbosum* (*Lachenalii*, Koch; *pallens*, DC.). L. of *C. bulbosum.* Fl. of *C. oleraceum.* Inflorescence intermediate.

Another form is nearer to *bulbosum*, and specimens are found hardly differing from that species except in the colour of the flowers.

bulboso-oleraceum has Root and L. much like those of *C. oleraceum*, with the Fl. and Inflorescence like those of *C. bulbosum*, except that there are one or two bracts, and that the Fl. are not purple. Sw. and G. *occ.*—Nægeli *in* Koch.

7. *oleraceo-acaule* (*rigens*, Hort. Kew.). L. of *C. acaule.* Fl. of *C. oleraceum.* Inflorescence and Bracts intermediate.

Another form differs from *C. acaule* in having longer and more acute Phyllaries, yellowish Fl., and the borders of the Flt. longer than the tube.

acauli-oleraceum. L. of *C. oleraceum.* Fl. of *C. acaule*, but white or yellowish. Inflorescence and Bracts intermediate, but rather approaching those of *C. acaule.*

Another form differs from *C. oleraceum* in the sometimes two-lobed divisions of L., the Fl. on longer stalks, and the Bracts narrower. *Scattered throughout* G. and Sw.—Nægeli *in* Koch.

8. *cano-oleraceum* (*Card. tataricus*, Linn.) in Root and L. agrees with *C. oleraceum*; in

the long Fl.-stalks and Phyll. rather with *C. canum.* In the small L. of the flowering-branches, and in the Bracts, it is intermediate.

Another form differs from *C. oleraceum* in having somewhat decurrent L., more spines at base, and narrower and shorter bracts. *Moist meadows.* c. G.—Nægeli *in* Koch.

13. **carniolicum.** Fl. sessile, crowded, 3 or 4 together, somewhat globose. Bracts linear, pectinato-ciliate. Phyll. linear, pubescent, without a keel. L. ciliato-spinose, bearing rufescent hairs on the nerves, not webby. *Rocks.* c. Pyr. Carinthia. Carn.

14. **spinosissimum.** Fl. sessile, crowded. Bracts laciniate, very spinose, far exceeding flowers. Phyll. ending in spines as long as themselves. L. elliptico-lanceolate, sinuato-lobate. **p.** 7, 8. *Moist mountains.* Alps. Jura.

HYBRIDS.

1. *oleraceo-spinosissimum.* L. of *C. oleraceum.* Fl. of *C. spinosissimum.* Bracts intermediate. *Moist meadows* in the Bavonnax at Bex.

2. *spinosissimo-Erisithales.* L. of *C. Erisithales,* but narrower and more thorny, with shorter and broader segments, and the sinuses between the teeth more obtuse. Fl. of *C. spinosissimum,* but the Phyll. shorter and more spreading, and less thorny. Bracts intermediate. *Meadows.* s. Tyrol.

Another form, more closely resembling *Erisithales,* occurred in the garden at Erlangen, from seeds of *C. spinosissimum.*—Nægeli *in* Koch.

3. *rivulari-spinosissimum.* L. resembling those of *C. spinosissimum.* Fl. and Inflorescence more like those of *C. rivulare.* *Meadows.* Mt. Cenis.—Nægeli *in* Koch.

4. *heterophyllo-spinosissimum* (*C. rigens,* DC.; *C. antarcticus,* Vill.). Lower L. somewhat webby beneath, and resembling more those of *C. spinosissimum.* Upper L. and Fl. resembling those of *C. heterophyllum.* Bracts intermediate. Fl. milky or purple.

Another form approaches more to *C. spinosissimum,* with Fl. often yellowish. *Moist mountain meadows.* Sw.—Nægeli *in* Koch. C. controversum, DC., *probably belongs to this hybrid.*

5. *acauli-spinosissimum.* Some specimens have nearly the L. of *C. spinosissimum* and Fl. of *C. acaule*; in others the characters are more intermediate. *Mountain pastures.* Sw. *rare.*—Nægeli *in* Koch.

15. **Bertolonii.** Fl. few, crowded. Bracts pectinate, very spinose. Phyll. lanceolato-linear, acuminate, mucronate. Stem branched. L. bipinnatifid, very spinose. **b.** 8. Mts. of Carrara.

16. **glabrum.** Fl. crowded, on short stalks. Bracts pinnatifid, spinose, hardly exceeding flowers. Phyll. erect, spinescent. Stem simple. L. pinnatifid, spinoso-dentate, hairless. **p.** *Torrents.* Heas and Venasque, centr. Pyr. ✓

17. **microcephalum.** "L. lanceolate, pinnatifid, at first webby above, densely tomentose beneath. Stem-L. auriculato-semiamplexicaul. Segm. of all bipartite, spinoso-subulate. Cal. webby. Outer Phyll. lanceolate, on an ovate or oblong base, spinose, somewhat narrowed; innermost lanceolato-linear, spinescent. **p.** 7, 8. *High open.* Monte Gennargentu."—Moris.

ii. *Flowers without bracts.*

a. *L. not decurrent.*

* *L. evidently expanded at base and amplexicaul.*

18. **Erisithales.** Fl. crowded, nodding, *yellow.* Stalks densely pubescent, nearly leafless. Phyll. lanceolate, spreading horizontally from the middle; glutinous, not webby. L. pinnatipartite. Segm. lanceolate, acuminate, recurved. **p.** 7–9. *Shady mountains.* Jura. Alps. ✓

HYBRIDS.

1. *palustri-Erisithales.* Root, Stem, and L. very like those of *C. Erisithales,* except that the latter are decurrent and more thorny. Fl. like those of *C. palustre,* but rather larger, and with somewhat spreading phyllaries. Inflorescence intermediate. Garden at Turin. —Nægeli *in* Koch.

2. *Erisithali-heterophyllum* (*C. pauciflorus,* DC.). The L., webby beneath and green above, and the tomentose stalk, recall the characters of *C. heterophyllum*; the crowded, nodding, subrotund Fl. and glutinous Phyll. are like those of *C. Erisithales.* *Fl. purple.* *Mountain meadows.* Alps.—Nægeli *in* Koch.

19. **ochroleucus.** Fl. yellow, somewhat crowded, erect. Stalks white, woolly. Phyll. not glutinous, lineari-lanceolate, with soft mucro, somewhat recurved. L. pinnatipartite, ciliato-spinulose. Segm. lanceolate, acuminate, 3-nerved. **p.** 7, 8. *Moist woods and meadows.* w. Alps.

20. **rivulare.** Fl. 1–3, crowded on a long stalk, which is leafless in upper part. Phyll. ✓

lineari-lanceolate, adpressed, coloured. L. not webby beneath, pinnatifid. Segm. lanceolate, acuminate, undivided. **p.** 7. *Moist mountain meadows.* Alps. Boh.

HYBRIDS.

1. *palustri-rivulare* (*C. subalpinum*, DC.). Root and L. more like *C. rivulare.* Fl. like *C. palustre.* Inflorescence intermediate. Bracts 0.

Another form differs in little from *C. rivulare,* except in having somewhat decurrent L.

rivulari-palustre. L. and Wings of the Stem like those of *C. palustre.* Fl. of *C. rivulare.* Inflorescence intermediate, but most like the last. Sw. and Savoy.—Nægeli *in* Koch.

2. *rivulari-heterophyllum* (*C. pauciflorum*, Koch, ed. 1). L. with a whitish web beneath, dentate or pinnatifid, with lanceolate, nearly horizontal lobes. Phyll. oblongo-triangular, ending in a very short spreading spine. Border of Flts. longer than tube, *purple.* L. nearer to *C. heterophyllum*; Fl. to *C. rivulare. Meadows on the granitic* Alps of Styria.—Nægeli *in* Koch.

21. **montanum.** "L. sessile, oblongo-elliptic, hairless, paler beneath, sinuate. Segm. ovate, remotely serrate, spinulose: upper laciniate. Fl. crowded. Phyll. lanceolate, mucronulate, spreading. Fl.-stalks erect, with 1 or 2 bracts. *Fl. purple.* **p.** *Woods.* Monte Baldo."—Poll.

✓ 22. **heterophyllus.** Fl. solitary or somewhat clustered, globose, on long, leafless, webby stalks. Phyll. adpressed, unarmed: inner long, scariose, coloured, entire. L. lanceolate, sometimes with lanceolate offsets, serrate, cottony beneath. Stem-L. much enlarged at base. **p.** 6–8. *Mountain meadows.*

** *L. hardly or not at all enlarged at the base.*

✓ 23. **pratense** (*anglicum*, DC.). Root somewhat tuberose. Stem usually 1-flowered, webby at top. L. lanceolate, sinuato-dentate, webby beneath: lower hafted; upper sessile or slightly amplexicaul, distant. Phyll. adpressed, webby; outer mucronate. **p.** 6. *Boggy meadows.*

Forsteri. Probably a hybrid between this and *C. palustre.* L. numerous, decurrent, but not to the next L., pinnatifid. Lobes bifid. Fl. 2 or 5 together. Outer Phyll. lanceolate, mucronate; inner finely acute. *Seems in all respects intermediate.* 7, 8. *Boggy.* Tunbr. Wells. Charmouth. Mayo.

24. **bulbosum.** Root tuberous. Stem usually 1-flowered, somewhat woolly. Upper L. small and distant. L. somewhat webby beneath, pinnatipartite. Lobes somewhat palmate. Lower L. hafted; upper sessile. Phyll. webby, erect: outer mucronate. **p.** 7, 8. *Boggy meadows and thickets.* m. Eur. *Koch unites this with the preceding.* ✓

HYBRIDS.

1. *palustri-bulbosum.* L. and ramification of *C. bulbosum.* Fl. of *C. palustre,* but somewhat larger. Zürich.

Another form differs from *C. bulbosum* chiefly by having decurrent L. Zürich.

bulboso-palustre. L. of *C. palustre.* Fl. of *C. bulbosum.* Inflorescence intermediate. Zürich.—Nægeli *in* Koch.

2. *bulboso-acaule* (*Zizianum*, Koch). L. of *C. acaule.* Fl. of *C. bulbosum.*

Another form differs chiefly from *C. acaule* in having the Fl. and upper part of Stalk webby and nearly leafless, and the Flts. less slender. Zürich.

acauli-bulbosum. L. of *C. bulbosum.* Fl. of *C. acaule.*—Nægeli *in* Koch.

25. **acaule.** Stem almost 0, usually 1-flowered. Root-L. stalked, oblong, pinnatifid, not webby. Lobes dentato-spinose. Phyll. ovate, smooth, adpressed, obtuse, but contracted into a short mucro. Border of Cor. shorter than the tube. **p.** 7, 8. *Dry hills.* ✓

β. Stalked. *DC. refers hither* Rozeni, Vill., dubius, Willd., mollis, Vill., Zizianum, Koch.

HYBRIDS.

1. *rivulari-acaule.* L. of *C. acaule,* but less deeply divided, with narrower segments and larger spines. Inflorescence and Fl. of *C. rivulare,* but the latter somewhat larger. *Moist mountain meadows.* Sw.

Another form differs from the caulescent var. of *C. acaule* in having the L. and their divisions somewhat narrower, hardly any bracts, and the border of Cor. at least as long as tube.—Nægeli *in* Koch.

2. *heterophyllo-acaule.* Habit of caulescent var. of *C. acaule.* L. less deeply divided and somewhat webby beneath. Fl. of *C. heterophyllum,* but larger, and with 1 or 2 bracts. Zermatt, Vallais.

Another form approaches more nearly to *C. acaule,* but with webby stem, weaker spines, and somewhat smaller and narrower flowers.—Nægeli *in* Koch.

b. *L. decurrent, but not to the next L.*

26. **pannonicum.** L. lanceolate, undivided, ciliate, spinulose, scabrous, green on both sides. Fl. solitary, on long stalks. Phyll. smooth, linear, adpressed, unarmed, acuminate, coloured. **p.** 6, 7. *Rugged mountains.* s. G. s. Switzerland.

HYBRIDS.

1. *pannonico-acaule.* L. of *C. acaule,* but glaucous. Stems intermediate. Fl. of *C. pannonicum,* but somewhat larger. Carn.

2. *pannonico-Erisithales.* L. more like those of *C. Erisithales.* Fl. and Inflorescence nearer to those of *C. pannonicum.* Fl. purple. It. Switzerland.

Another form differs little from *C. Erisithales,* except in having somewhat decurrent L. and purple flowers.—Nægeli *in* Koch.

27. **tuberosum** (*pratense,* DC.). Stem striate, villous, branched at top. L. lanceolate, incise, ciliato-spinulose. Fl. solitary, nearly globose, on a stalk bearing small L. Phyll. lanceolate, adpressed, mucronate. **p.** *Meadows.* s. Fr. *Resembles* C. monspessulanum, *but has Fl. more detached and L. more divided and less decurrent.*

c. *L. decurrent to next L., forming two wings.*

28. **monspessulanum.** The Stem tall, branched. L. lanceolate, undivided, somewhat repand, unequally ciliate, *generally webby beneath.* Fl. crowded, ovato-globose. Phyll. lanceolate, adpressed, mucronate. **p.** 8, 9. *Moist meadows.* mdt. Fr. Pdm.

β. *pyrenaicum.* L. cano-tomentose beneath.

γ. *dissectum.* L. sinuato-pinnatifid.

29. **canum.** Root of bundled fusiform fibres. Stem somewhat striate, webby. L. oblongo-lanceolate, sinuate or eroso-dentate, somewhat hoary beneath. Lobes triangulari-lanceolate. Fl. solitary, subglobose, on long, nearly naked, webby stalks. Phyll. lanceolate, adpressed, with short mucro, spreading after flowering. **p.** 7, 8. *Moist fertile meadows.* e. G.

30. **serratum.** Lower L. decurrent, oblong, fleshy, serrato-dentate, spinoso-ciliate: upper lanceolate, hardly decurrent. Fl. solitary, on long stalks. Phyll. ovate, adpressed, mucronate. **p.** s. Eur. *Perhaps not distinct from* canum.

The Hybrids are so numerous in this genus, that it seemed necessary to mention them. It will be seen that they mostly assume two forms, in each of which we find the L. and lower part of the plant most like those of what is considered to be the male parent, while the Fl. rather resemble those of the female. The name of the female parent is uniformly placed first by Mr. Nägeli. Between the hybrid and the male plant there are often intermediate forms; but not, apparently, between the hybrid and the female. Whether a similar peculiarity can be traced in *Carduus,* and whether hybrids ever occur between *Carduus* and *Cirsium,* I am not able to say.

483. CHAMÆPEUCE.

1. **gnaphalodes.** A shrub. Flts. ringent. Axils of the upper L. furnished with 2 spines. Phyll. long, with short spines, somewhat woolly; lower hardly spreading. Filts. feathered. **s.S.** Calab. Iapygia.

2. **stellata.** L. sessile, lineari-lanceolate, flat, white and cottony beneath, with 1 or 2 spines on each side of the base. Phyll. tubercled at the base of the appendage. Flts. nearly regular. **a.** 6, 7. *Dry fields.* Nice. Sic.

3. **Casabonæ.** L. sessile, ovato-lanceolate, reddish and cottony beneath, bearing biternate spines on margin. Phyll. hardly tubercled within. Flts. nearly regular. **b.** 7. *Open barren.* Elba. I. of Hyères. Sard.

4. **stricta.** L. semidecurrent, forming a somewhat spinose wing, lanceolate, sinuato-dentate, webby beneath. Segm. cloven. Phyll. lanceolate, with subulate appendage, webby, spreading. Flts. nearly regular. **p.** *Rugged hills.* Naples.

5. **firma.** L. amplexicaul, rigid, woolly beneath, pinnatifid. Segm. divaricate, 3-spined. Stem straight, simple. Fl. crowded, bracteate. Phyll. webby, linear, spinulose, spreading at top. Cor. ringent. Filts. hirsute. **p.** 6, 7. *Fields.* Palermo, *according to Presl.*

6. **nivea.** L. semiamplexicaul, sinuato-pinnatifid, webby above, tomentose and very white beneath. Div. 2–3-lobed. Lobes acuminato-spinescent. Fl. thick, nearly globose, webby. All Phyll. acuminato-spinescent: appendage of outer ones spreading, with a prominent midrib. Flts. ringent. **p.** 6, 7. Abr. Nebrodes.

484. NOTOBASIS.

1. **syriaca.** L. amplexicaul, oblong: the upper pinnatipartite, with spinose segments. Fl. terminal and axillary, nearly sessile. **a.** 6–8. *Dry stony.* It. Sic. Sard.

485. PICNOMON.

✓ 1. **Acarna.** L. decurrent, lineari-lanceolate, tomentose, hoary, dentate, spinose and ciliato-spinulose; upper surrounding flowers. **a.** 6. *Barren fields.* s. Eur.

486. ONOPORDON.

A. *Stem erect, many-flowered. Outer Phyllaries spreading, nearly as long as inner. L. decurrent.*

✓ 1. **Acanthium.** L. sinuate, spinoso-dentate, tomentose on both sides. Phyll. lineari-subulate, woolly at base. **b.** 7, 8. *Uncult. Not in Sic.*

2. **virens.** L. sinuate, spinoso-dentate, green on both sides. Phyll. rigid, lanceolate, somewhat cottony and viscid at base. **a. b.** 7. *Uncult.* Montp. Rome. Sic.

3. **horridum.** L. sinuato-pinnatifid, with strong spines: lower somewhat villous; upper nearly smooth. Phyll. ovato-lanceolate, smooth; outer somewhat reflexed. **b.** 6, 7. Bonifacio.

4. **illyricum.** L. oblongo-lanceolate, sinuate, dentato-spinose, tomentose; the upper very short. Phyll. tomentose at base, smooth at top, ovato-lanceolate: outer recurved; inner spreading. **b.** 6, 7. *Rough and uncult.* s. Fr. Italy.

5. **macracanthum.** L. oblongo-lanceolate, acuminate, sinuato-pinnatifid, with spinescent teeth. Phyll. webby at base, smooth at top, lanceolate, acuminate: middle ones subulato-spinose, spreading, equalling tube of corolla. **b.** 6. *Walls and banks.* I. la Maddalena, Sard. *Hardly distinguishable from* O. illyricum.

B. *Stem erect, many-flowered. Outer Phyllaries imbricate, evidently shorter than inner.*

6. **arabicum.** L. decurrent, oblongo-lanceolate, sinuate or pinnatifid, dentato-spinose, tomentose on both sides. Phyll. nearly smooth, lanceolate: outer adpressed. **b.** 6, 7. *Dry shores.* Sard.

C. *Stem none.*

7. **pyrenaicum.** L. stalked, tomentose, white beneath, pinnatifid, dentato-spinose. Fl. many, obovate. Phyll. lanceolate, subulato-spinescent, nearly erect. **b.** *Open rough.* e. Pyrenees.

487. CYNARA.

1. **Cardunculus.** Branched. L. spinose, all pinnati-lobate. Div. often pinnatifid, tomentose beneath. Phyll. ovate, acuminato-spinescent. **p.** or **b.** 6, 7. *Rough fields.* s. Fr. Sard. Mtp. Cors.

2. **horrida.** Branched. L. spinose, pinnatifid, tomentose beneath: lower somewhat decurrent. Spines at the base of L. and of their divisions connate at base. **p.** 6, 7. *Dry.* Civita Vecchia. Sic.

3. **humilis.** Stem simple. L. not decurrent, pinnatipartite. Div. pinnatifid, linear, spinescent, tomentose beneath. Phyll. ending in a subulate spine. **p.** ? *Rugged hills.* Cors.

488. ATRACTYLIS.

✓ 1. **cancellata.** Stem branched. L. lineari-lanceolate, ciliato-spinulose, pubescent. Outer Phyll. setaceo-pinnatifid, spinose, connivent, exceeding flowers. Flts. all alike. **a.** 6. *Open rocky.* Mdt.

2. **humilis.** Stem somewhat branched, somewhat woolly at base. L. oblongo-linear, pectinato-pinnatifid, spinoso-dentate. Fl. 1–3, terminal, *yellow.* Outer Flts. complete, palmate, resembling rays. **b.** *Open barren.* Narb. It.—DC.

3. **radiciflora.** Stems numerous, short. L. lanceolato-linear, hairless, pinnatifido-dentate. Teeth spinescent. Fl. solitary, nearly sessile on the neck of the root. Outer Flts. generally abortive, long lingulate, 5-fid, radiate. **p.** Narbonne? *Fl. purple. Resembles* A. humilis, *but the interior Phyll. are not truncate.*—DC.

Tribe III. *CARLINEÆ.*

489. KENTROPHYLLUM.

✓ 1. **lanatum.** Base of Cal. cuneate. Outer Phyll. woolly, squarrose, leaf-like; inner adpressed. Stem webby at top. Lower L. pinnatifid, dentate; uppermost amplexicaul, pinnatifido-dentate. **a.** 7, 8. *Barren.* s. Fr. Sw. s. e. G. It.

2. **turbinatum.** Base of Cal. turbinate. Outer Phyll. straight, woolly. Stem webby. Upper L. amplexicaul, dentato-pinnatifid. **a.** 6, 7. *Fields.* Polizzi, Sic.—Guss.

490. CARDOPATIUM.

1. **corymbosum.** Corymbose. L. pinnatipartite. Lobes pinnatifid, incise, spinose. *Fl. blue.* **p.** *Dry fields.* Abruzzi.

491. CARDUNCELLUS.

A. *Crest as long as corolla. Flowers solitary.*

1. **pinnatus.** L. pinnatipartite to midrib. Segm. 7–10 on each side, lanceolate, spinescent. Margin serrato-spinescent. Outer Phyll. leafy, serrato-spinescent. Seed with 4 acute edges. **p.** 5, 6. *Fields.* Sic.

✓ 2. **monspeliensium.** L. rigid, pinnatipartite almost to midrib. Segm. 4–7 on each side, lanceolate, spinescent. Margin serrato- or often inciso-spinose. Outer Phyll. often 3-nerved at base, spinose. Seed obovoid, with 4 nerve-like angles. **p.** 7. *Barren.* s. Fr. It. *Sometimes stemless.*

3. **mitissimus.** L. nearly unarmed, pinnatipartite almost to midrib. Segm. 5–7, lanceolato-linear, acute, inciso-serrate. Phyll. leafy, inciso-serrate. Seed obovato-oblong, with 4 nerve-like angles. **p.** 6, 7. *Barren uncult.* s. Fr. *occ.* Etampes.

B. *Crest half as long as corolla.*

✓ 4. **cæruleus.** Lower L. oblongo-spatulate, spinescent, dentate (stalked, Guss.). Outer Phyll. leafy, 3-nerved, serrato-spinose: middle striate; inner with long cilia. **a.** 5–7.

5. **tingitanus.** "Stem simple, 1- or more flowered. Lower L. lanceolate, spinoso-pinnatifid, widened at base and amplexicaul. **p.** 5–7. *Clayey.* Sic."—Guss.

492. CARTHAMUS.

✓ 1. **tinctorius.** Stem-L. ovato-lanceolate, serrato-spinulose. Seed somewhat 4-edged. **a.** 7, 8. s. Eur. *Probably escaped.*

493. CARLINA.

A. *Outer Phyllaries leafy; inner radiating: hardly any intermediate ones.*

1. **acanthifolia.** Stemless. L. stalked, pinnatifid, somewhat hirsute on both sides. Segm. dentato-spinose. Fl. solitary, very large. Longer Chaff acute, slightly thickened below the summit. **p.** *Mountain pastures.* w. Alps. Carniola. Tusc.

β. *Cynara.* Inner L. sessile; all smooth above. e. Pyr.

2. **subacaulis.** Stem very short, 1-flowered. L. stalked, pinnatifid. Segm. inciso-dentate, spinescent. Longer Chaff obtusely clubbed. **p.** 7, 8. *Mountain pastures.*

α. Radiant Phyll. linear at base.

β. *simplex.* Radiant Phyll. attenuate at base.

3. **vulgaris.** Stem 1- or more flowered, webby. L. lanceolate, spinoso-dentate, pubescent beneath. Inner Phyll. whitish, exceeding the outer. (Flowering-branches everywhere leafy, Godr.) **b.** 7, 8. *Dry hills. Intermediate Phyll. not always altogether wanting, but they are very few and small.* ✓

B. *Imbricate Phyllaries between the leafy and the radiate.*

4. **longifolia.** Stem 1–3-flowered. L. lanceolate, remotely dentate: lower very long. Radiant Phyll. white, ciliate to middle, falling short of outer. **b.** 7, 8. *High rocky.* Three-fourths of the flowering-branches quite naked. *Granite* of the upper Vosges.—Godr. Slopes above the Sintersbach Wasserfall near Kitzbühel in the Tyrol. *This is placed by Koch with* C. nebrodensis.

5. **nebrodensis.** Stem simple, about 3-flowered, woolly. L. lineari-lanceolate, dentate, spinescent; upper tomentose on both sides. Fl. on long stalks. Radiant Phyll. yellow, brownish externally, hardly exceeding the outer. **p.** 7, 8. *Rough hills.* Nebrodes. Vosges. Tyr.

6. **sicula.** Stem 1–3-flowered, hairless. L. pinnatifid, dentato-spinose, hairless above. Fl. sessile. Radiant Phyll. silvery; outer spinescent, as long as inner. **p.** 7, 8. *Uncult.* Sicily.

7. **lanata.** Stem forked. L. lanceolate, sinuato-spinose. Fl. solitary, in the forks, and terminal. Radiant Phyll. purplish, hairless. **a.** 6, 7. *Open rough.* s. Fr. It. Sard.

8. **involucrata.** "Stem forked or corymbose. L. oblongo-linear, ciliato-spinulose, pinnatifid. Segm. somewhat squarrose. Cal. globose. The yellow radiant Phyll. not exceeding the outer, sinuato-spinose ones. **b.** 9, 10. *Barren hills.* Sic."—Guss.

9. **macrocephala.** "Stem simple or somewhat branched (not forked). Bracts spinose. Outer Phyll. few, coloured; inner radiant, linear, acuminate, tapering pretty regularly from the base to the summit. **b.** 7. *High stony.* Monte Gennargentu, Sard."—Moris.

10. **corymbosa.** Stem corymbose. L. cordato-lanceolate, pinnatifido-dentate, spinose, hairless. Fl. all terminal. (Cal. cuneate at base, Guss.) Inner Phyll. yellow. **a. b.** 6, 7. *Stony.* Mdt. ✓

11. **racemosa.** Stem woolly, branched. ✓

Fl. crowded or solitary, in the forks and terminal. L. lanceolate, ciliate, spinescent. Radiant Phyll. yellow, occasionally fuscous externally. **a.** Autumn. *Barren hills.* Cors. Sardinia.

C. *Inner Phyllaries neither coloured nor radiant.*

12. **gummifera.** Nearly stemless. L. pinnatifid. Outer Phyll. somewhat convex, spinose on back and margin, ending in three points. **p.** 9. *Barren coasts.* Sard. Sic. Apulia. *Hardly agrees with* Carlina *in generic character. Linn. placed it with* Atractylis.

494. SILYBUM.

1. **marianum.** L. amplexicaul, sinuate, spinose, hairless on both sides, *adorned with white spots.* Fl. terminal. **a.** 7, 8. *Uncult.*

495. RHAPONTICUM.

✓ 1. **cynaroides.** Appendage to Phyll. long, acuminate, serrato-ciliate, scariose only on margin. Lower L. pinnatipartite; upper hardly pinnatifid. Segm. acutely dentate. Fl. few, erect. **p.** 8, 9. *Rough meadows.* e. Pyr.

2. **scariosum.** Appendage to Phyll. very broad: all scariose; inner lineari-lanceolate, very acuminate. L. undivided, cano-tomentose beneath: lower stalked, oblong; upper sessile, elliptic. **p.** 7, 8. *Rough meadows.* w. Alps. Carniola.

496. LEUZEA.

✓ 1. **conifera.** Seeds tubercled. Appendage to Phyll. nearly circular. L. lanceolate, entire or pinnatifid. Stem simple, 1-flowered. **p. b.** 5, 6. *Rocky, barren.* s. Fr. It. Sic. Sard.

Tribe IV. *CENTAURIEÆ.*

497. CNICUS.

✓ 1. **benedictus.** L. amplexicaul, somewhat decurrent, pinnatifid. Fl. terminal, bracteate, *yellow.* **a.** 4. *Stony.* s. Eur.

498. MICROLONCHUS.

✓ 1. **salmanticus.** Stem erect, somewhat branched. Lower L. pinnatifid, scabrous; others linear, undivided. Fl. solitary, terminal, on long stalks. **a. b.** 5, 6. *Dry.* s. Europe.

499. CRUPINA.

1. **vulgaris.** Stem erect. L. pinnatipartite. Segm. linear, distant, denticulate. Fl. oblong, hairless, naked. **a.** 7, 8. *Rough.* s. Europe. ✓

500. CENTAUREA.

A. Phyllaries without any distinct appendage. Sp. 1–3.

B. Appendage to Phyllaries abrupt, unarmed.
- **i.** Appendage to middle Phyllaries scariose, not feathery. Sp. 4–10.
- **ii.** Appendage of middle Phyllaries pectinato-plumose.
  - **a.** Middle of Appendage not prolonged. Sp. 11–14.
  - **b.** Middle of Appendage prolonged. Sp. 15–21.

C. Appendage to Phyllaries decurrent, unarmed.
- **i.** Outer Phyllaries without membranous margin. Appendage pectinato-ciliate. Sp. 22–28. (In Sp. 23 and 24 the Phyllaries end in a mucro or small spine.)
- **ii.** All Phyllaries with a pale, entire, membranous margin.
  - **a.** Appendage pectinato-ciliate. Sp. 29–33.
  - **b.** Appendage palmate. Sp. 34, 35.
  - **c.** Appendage entire. Sp. 36.
- **iii.** Margin of Phyllaries dark and ragged Sp. 37.
- **iv.** Margin dark, pectinato-ciliate, passing into appendage. Sp. 38–41.
- **v.** Margin serrato-fimbriate. Sp. 42–44.

D. Appendage to Phyllaries spinescent.
- **i.** Phyllaries spinoso-ciliate, prolonged into a soft, terminal spine. Sp. 45.
- **ii.** Like **i.**, but the spine rigid. Sp. 46–52.
- **iii.** Phyllaries not spinoso-ciliate, ending in a simple spine. Sp. 53.
- **iv.** Phyllaries with accessory spines at base.
  - **a.** Flowers yellow. Sp. 54–60.
  - **b.** Flowers purple. Sp. 61–67.
- **v.** Spines palmate, nearly equal. Sp. 68–72.

Not well known. Sp. 73–75.

A. *Phyllaries somewhat membranous at top, but without a distinct appendage.*

1. **Crupinastrum.** Shafts of Crests to inner Seeds very numerous, tiled in many rows. L. pinnatipartite. Segments nearly linear, serrate or serrato-pinnatifid, fringed with glands. **a.** 4–6. *Open hills.* Sard. *Resembles* Crupina.—Moris.

2. **Centaurium.** Shafts of Crest in 2 rows; outer longer. L. pinnatipartite. Segm. lanceolate, acutely and unequally serrate. *Fl. brownish purple.* **p.** 7. Susa. Fenestrelle and Val d'Ossola in Pdm. Monte Gargano.

3. **alpina.** Shafts in 2 rows; outer longer. L. quite smooth, pinnate. Segm. oblongo-linear, serrate only at top. *Phyll. striped with brown. Fl. yellow.* **p.** St. Maurice in Savoy. Duomo d'Ossola.

B. *Middle Phyllaries unarmed. Appendage abrupt.*

i. *Appendage cartilaginous or scariose, not feathery.*

4. **tauromenitana.** "Crest of many rows. Appendage generally trifid, cartilaginous. Div. tomentose. Lower L. lyrato-pinnatifid, webby beneath: terminal lobe very large and irregularly toothed. Upper L. pinnatifid, smooth. Segm. entire, nearly equal. Cal. ovato-globose. Appendage of the same colour. **p.** 5, 6. *Rocks above* Taormina."—Guss.

5. **alba.** Crest double. Appendage transparent, cuspidate. Root-L. lyrate or pinnatifid. Segm. of all acute. **p.** 7, 8. *Open hills.* s. Eur. *Appendage altogether pale.*

β. *deusta.* Appendage with a dark spot.

6. **splendens.** Crest double. Appendage rounded, without cusp. Root-L. pinnate. Segm. of all acute. **p.** 7, 8. Naples?

7. **incana.** Crest simple. Appendage nearly without cusp, marked with a dark spot. L. white and cottony on both sides, with obtuse, mucronate, entire segments; lower lyrato-pinnatifid. *High rocks.* Abr.

8. **deusta.** Crest 0. Appendage of all Phyll. scariose, with a dark spot, and terminating in a long seta. Lower L. pinnate. Root-L. pinnatifid: upper entire. **p.** 6, 7. *Sandy shores.* Faro at Messina.—Guss.

✓ 9. **amara.** Crest 0. Appendage of all Phyll. simply scariose, not transparent. Root-L. stalked, lanceolate. Stem-L. sessile, lanceolate or linear. Fl. bracteate. **p.** 8. *Dry open.* s. Eur.

10. **Jacea.** Crest 0. Appendage of outer Phyll. fringed; of middle scariose. Root-L. somewhat toothed. Stem-L. sessile, lanceolate, quite entire. **p.** 6–9. *Dry pastures.* m. Europe. ✓

β. *decipiens.* A larger portion of Phyll. fringed.

γ. *nigrescens,* DC. *According to Koch, middle Phyll. fringed. This seems to differ from the radiate var. of* C. nigra *only in the want of crest to the seeds.*

δ. *pratensis.* Appendage prolonged, acute.

It also occurs sometimes without radiant Florets.

ii. *Appendage of middle Phyllaries with pectinate fringe.*

a. *Middle of Appendage not prolonged.*

11. **nigrescens.** Crest 0. Appendage distant, *not covering the whole calyx.* L. oblong or ovate, denticulate: lower sometimes lyrato-sinuate. **p.** 7, 8. *Mountain meadows.* s. Alps.—Koch. *Seems to differ from* Jacea γ *only in the smaller size of the appendages.*

12. **mutabilis.** Crest short. Appendage of middle Phyll. lacerate at base, pectinate at top. Phyll. with a scariose wing! L. lanceolate, entire; lower sometimes lyrate. **p.** *Uncult.* Agen. *Fl. at first yellow: Rays afterwards becoming purple. The membranous margin makes it doubtful if this should not rather be placed in Div.* **C.**

13. **nigra.** Crest short, unequal. Appendage of middle Phyll. altogether pectinate. L. lanceolate or linear; lower somewhat sinuate. **p.** 7, 8. *Meadows and uncult. Varies with or without radiant Flts.* ✓

14. **spatulata.** Crest short. Appendage of middle Phyll. altogether pectinate. L. very rough, spatulate; lower somewhat lyrate. **p.** *Stony hills.* Abr.

b. *Appendage pectinato-plumose, prolonged in the middle, recurved.*

15. **austriaca.** Stem erect, branched. L. ovate, rough, undivided, coarsely toothed. Fl. radiant, nearly sessile among upper L. **p.** 7, 8. *Stony.* c. G. ✓

16. **procumbens.** Branched, procumbent, cottony. Lower L. lyrate; upper ovate, amplexicaul. Fl. radiant, sessile among upper L. **p.** Between Utelle and Tourettes in Pdm. *Very rare.*

17. **pectinata.** Branched, erect, hoary.

Lower L. dentate, lyrate; upper sessile, amplexicaul: all L. mucronate. Fl. radiant, sessile among upper L. **p.** 7, 8. *Stony.* s. Fr. Piedmont.

18. **flosculosa.** Somewhat branched, roughish. L. lanceolate; the lower stalked. Fl. without rays, sessile among upper L. **p.** 7, 8. Pdm. Belg. (*Var. of* C. phrygia, Koch.)

✓ 19. **nervosa.** Stem simple, 1-flowered. Crest nearly as long as seed. L. lanceolate, denticulate, undivided: upper deeply toothed and somewhat truncate at base. Fl. nearly sessile among upper L. **p.** 7, 8. *Mountain pastures.* Sw. s. Tyr. Carn.

✓ 20. **phrygia.** Stem simple, 1-flowered. Crest about one-third as long as seed. L. ovate or elliptic, denticulate, often deeply toothed at base, somewhat auricled. Fl. globose, sessile among upper L. **p.** 7, 8. *Mountain woods and pastures.* Alps.

✓ 21. **uniflora.** Simple, 1-flowered, cottony, hoary. L. lineari-lanceolate, acuminate: lower attenuate, somewhat dentate; upper sessile, somewhat auricled, entire. Fl. subglobose, nearly sessile among the upper L. **p.** 7, 8. *Mountain pastures.* Savoy. Dau.

C. *Appendage somewhat decurrent, unarmed.*

i. *Outer Phyllaries without membranous margin. Appendage pectinato-ciliate, unarmed. Stem corymbose.*

22. **Cineraria.** Appendage dark. Phyll. 5–7, ribbed. The whole plant very hoary. Nearly all L. bipinnatipartite. Segm. obtuse. **p.** 5, 6. *Calc. rocks on sea-shore.* Terracina to Calabria.

23. **Parlatoris.** "Appendage scarioso-ciliate. Outer Phyll. shorter, with black cilia and a short terminal spine; inner unarmed. Stem angular. Branches irregularly lengthened. Root-L. lyrato-pinnatifid and bipinnatifid. Stem-L. pinnatifid at base. The outer Segm. longer. L. of Branches linear, dentate at base. **p.** 6, 7. *Mountain pastures.* Sic." —Guss.

24. **cærulescens.** Appendage with dark spot, mucronate. Phyll. 5–7-ribbed. Root-L. bipinnatipartite. Segm. acute; upper linear, entire. **p.** mdt. Eur.?

✓ 25. **maculosa.** Appendage with dark spot, quite unarmed. Phyll. 5–7-ribbed. Lower L. bipinnatipartite: upper pinnatifid. Segm. linear; uppermost close to flowers. **b.** 7, 8. *Open uncult.* m. and s. Eur. *occ.*

26. **busambrensis.** "Phyll. with long brown cilia at top and on margin, spotted. L. pinnatifid. Segm. broad, acute, often inciso-dentate. **p.** 5, 6. *Stony calc. hills.* Monte di Calcanturo. Busambra. Isaello in Sicily. *Differs from* Cineraria *in rarely exhibiting somewhat bipinnatifid root-L.*"—Guss.

27. **cinerea.** Hoary. Appendages dark. Phyll. 5–7-ribbed. Root-L. pinnatipartite. Segm. lanceolate, somewhat incise, obtuse; upper pinnatifid at base, close to flowers. **p.** 5–7. *Dry hills.* It.

28. **paniculata.** Appendage pale. Phyll. 5–7-ribbed. L. somewhat woolly: lower bipinnatipartite; upper pinnatipartite. Segm. linear, acute; a few of uppermost quite entire, close to flowers. **b.** 7, 8. *Warm uncult.* s. Europe. ✓

ii. *All Phyllaries with pale, entire, membranous margin.*

a. *Appendage pectinate.*

29. **cristata.** Crest 0. Middle Div. of Appendage mucroniform. Root-L. nearly tripinnate; upper pinnate. Lts. and uppermost L. linear. Branches divaricate. **b.** 7, 8. *Dry stony.* Trieste.

30. **dissecta.** Crest very short. Appendage black, with white decurrent border. Plant grey, cottony. Root-L. pinnatipartite: segm. oblong, somewhat toothed. Stem-L. sessile: segm. linear, entire. **p.** *Stony.* K. Nap. Sic. *Not in Guss.*

31. **laciniata.** Hoary. Crest very short. Appendage reddish, decurrent in a scariose border. L. nearly all pinnatipartite. Segm. long, linear, acute, quite entire; uppermost linear, undivided. **p.** *Stony.* Abr.

32. **ambigua.** Somewhat cottony. Crest very short. Appendage pale, decurrent. Root-L. lyrato-pinnatifid. Stem-L. sessile, linear, quite entire; the lower with 1 or 2 lobes on each side of base. **p.** *Dry.* K. Naples.

33. **kartschiana.** Hairless. Crest as long as seed. (Appendage produced into a spine, Koch.) Root-L. nearly bipinnate. Stem-L. pinnate. Segm. and upper L. lanceolate, somewhat wider upwards. Stem much branched from base. **p.** 7, 8. *Rocky mountain meadows.* Duino. Cherso.

b. *Appendage palmate. Striæ of Phyllaries depressed.*

34. **sempervirens.** Somewhat shrubby. ✓

L. lanceolate, with a tooth on each side of base, otherwise entire: lowermost hastate. Fl. naked. **s.S.** or **p.** *Calc. mountains.* K. Nap.

35. **intybacea.** Somewhat shrubby. Lower L. pinnatipartite, segments lineari-lanceolate, acuminate, quite entire; upper sessile, with a few large teeth. Fl. naked. **s.S.** or **p.** *Open.* Mars. Narbonne.

c. *Appendage of middle Phyllaries entire.*

36. **aplolepis.** Whitish, cottony. Phyll. quite smooth. Margin of Appendage entire, except in the inner phyllaries. Lower L. bipinnate or pinnate, with incise, lanceolate Lts.; middle pinnatifid, segments quite entire; uppermost undivided. **p.** 5, 6. *Coasts.* Genoa. *Volcanic rocks.* Lipari Islands.

iii. *Margin dark, somewhat jagged at top. Appendage pectinate.*

37. **pullata.** Stem simple. Root-L. pinnatifid. Lobes ovate, entire. Stem-L. (if any) attenuate at both ends. Fl. ovate, sessile among upper L. **p.** *Coasts of* Mdt. *Hedges in* s. Fr., *according to Duby and Deslongchamps; but it does not seem to be the same. Not in Ital. Floras.*

iv. *Margin dark, pectinate, passing into appendage.*

38. **Scabiosa.** Branched, many-flowered. L. pinnatifid. Segm. lanceolate, pinnatifid at base. Div. entire, each ending in a callous tip. Appendage narrower than phyllary. **p.** 7, 8. *Meadows and uncult.*

β. spinulosa. Middle of Appendage prolonged into a spine.—Koch.

39. **kotschyana.** 1–2-flowered. L. pinnatifid or lyrato-pinnatifid. Segm. lanceolate, sometimes toothed, ending in callous tip. Appendage broader than phyllary. **p.** 7, 8. *Slopes.* Mount Ortscher in lower Aust.

40. **sordida.** Lower L. bipinnate; upper pinnatifid. Segm. linear, ending in a bristle-like mucro. Appendage not covering the nerveless phyllaries. **p.** 6, 7. *Dry meadows.* Carn. adr. G.—Koch.

41. **arachnoidea.** Stem-L. bipinnate. Segm. linear, furrowed. Carrara.—Pers.

v. *Margin serrato-ciliate, passing into appendage.*

42. **Cyanus.** Floccoso-tomentose. L. linear, sessile, quite entire: lower broader, pinnatifid or toothed at base. Crest about as long as seed. **b.** 6, 7. *Corn.*

43. **montana.** Stem nearly simple. L. oblongo-lanceolate, decurrent, somewhat webby. (Length of Fringe about equal to breadth of margin, Koch.) *This last character, on which Koch rests in order to distinguish this species from the following, appears to me very uncertain.* **p.** 7, 8. *Mountain and hilly pastures.* m. Europe.

44. **axillaris.** Fringe somewhat cartilaginous, more than twice as long as breadth of margin. L. decurrent, elongato-lanceolate, entire or sinuato-dentate. **p.** 7, 8. *Warm hills.* s. of Alps. *This includes* stricta, W. and K., *and* seusana, Vill.

D. *Appendage to Phyllaries spinescent.*

i. *Phyllaries with pectinate appendage prolonged into a soft spine.*

45. **filiformis.** Crown of Root covered with reddish-brown velvet. Stem otherwise hairless. Lower L. bipinnatipartite; upper pinnatipartite. Segm. lineari-filiform, acute. **p.** 5–7. *Calc. mountains.* Cors. Sard. Tavolara.

ii. *Phyllaries spinoso-ciliate and prolonged into a rigid, terminal spine.*

46. **diffusa.** Divaricato-ramose. Fl. nearly naked, *purple.* Spine of Phyll. spreading. Crest 0. Root-L. bipinnatifid. Lower stem-L. pinnatifid; upper lineari-lanceolate. **b.** 7, 8. Port Juvenal near Montpellier.

47. **horrida.** Shrubby, much branched, cottony. *Fl. purple.* Spine short. Crest double. L. pinnatipartite. Segm. subulate, spinescent. **s.S.** 5, 6. *Marit. rocks.* Genoa. Sardinia.

48. **hybrida.** Branched. Phyll. adpressed. Spine straight. Radiant Flts. purple; those of Disc yellow. L. somewhat woolly: lower pinnatifid; upper lineari-lanceolate, mucronate. **b.** *Open hills* near Turin. *A hybrid between* cærulescens *and* solstitialis?—DC.

49. **rupestris.** Fl. yellow, on long, naked branches. Lower L. bipinnatipartite; upper pinnatipartite. Segm. linear, entire, with very acute mucro; the terminal longest. **p.** 6, 7. *Rocks.* Carn. Apenn. Abr.

β. subinermis. Appendage to Phyll. hardly spinescent. Carrara.

γ. aculeosa. Appendage ending in a long, rigid, spreading spine. Carn.

50. **ceratophylla.** Flowering-branches few, leafy almost to top. Lower L. pinnatipartite. Segm. linear, very acute, quite entire.

Fl. yellow. *Open rocks.* Abr. Naples. Apenn. Sardinia.

✓ 51. **collina.** Phyll. ovato-lanceolate, longer than the somewhat spreading spine. Fl. yellow. L. somewhat asper: lower bipinnatifid, segments oblong or lanceolate, hardly acute; upper pinnatifid, segments linear; the last oblong. Uppermost L. undivided. **p.** *Open.* Coasts of Mdt.

β. With a longer spine.

52. **centaurioides.** Phyll. ovato-lanceolate, longer than the spreading spine. Fl. yellow. Lower L. simply pinnatipartite: lobes oblong, entire; the terminal larger and ovate: upper inciso-pinnatifid. **p.** *Fields.* mdt. Eur. *Not in Koch or Guss.*

iii. *Phyllaries ending in a simple spine.*

53. **aurea.** Flts. equal. Spines spreading. Stem erect, branched. Lower L. pinnatifid; upper not decurrent. **p.** s. Eur. *Perhaps not different from* C. Schouwii.—DC.

iv. *Phyllaries not spinoso-ciliate, but with accessory Spines at the base of the principal.*

a. *Flowers yellow.*

✓ 54. **solstitialis.** Outer Phyll. with palmate spines, nearly equal, woolly. Root-L. lyrate or pinnatifid. Stem-L. lanceolate, decurrent, quite entire. **a.** 7, 8. *Dry warm.* s. Eur. *Occ.* in north.

55. **lappacea.** Outer Phyll. with palmate spines, of which the lateral are short and soft, sometimes wanting. Stem much branched. Fl. terminal, solitary. Root-L. lyrato-pinnatifid. Stem-L. lineari-lanceolate, decurrent. **a.** 7–10. *Dry hills.* Sic.

56. **Schouwii.** Outer Phyll. with a simple, reflexed spine, somewhat woolly when young. Stem-L. linear, entire, mucronate, decurrent. **a.** 5–7. *Dry.* Nebr. Sard.

✓ 57. **melitensis.** Spines of Phyll. all similar. Fl. solitary among upper L. Root-L. pinnatipartite. Stem-L. linear, toothed. **a.** 5, 6. *Open.* Sic. Sard. Bois de Boulogne.

58. **apula.** Spines of Phyll. all similar, not very rigid. Fl. mostly clustered among upper L. Root-L. lyrate or pinnatipartite. Stem-L. lanceolate, quite entire, decurrent. **a.** *Open.* Apulia. Cors. Sard. Arles. Perpignan.

59. **sicula.** Fl. solitary among upper L. Spines of Phyll. all similar, rigid, spreading. Lower L. lyrate or pinnatifid. Stem-L. linear, mucronate, quite entire, decurrent. **a.** 7. Monte Artesino, Sic. Mtp.

60. **fuscata.** Phyll. all with similar spines. Fl. solitary, hairless, bracteate. Lower L. lyrate or pinnatipartite. Stem-L. amplexicaul, not decurrent. **p.** 6. *Dry hills.* Sic. Sard.

β. *xanthina*, Spreng. L. scabrous; upper spatulato-oblong.

b. *Fl. purple. L. not decurrent.*

61. **adulterina.** Phyll. scariose, ciliato-lanate, somewhat spinulose, and ending in a straight spine. L. lineari-oblong, acute; upper entire, approaching flower. **p.** Vercelli, Pdm. *Perhaps a hybrid between* C. Calcitrapa *and* paniculata, DC.

62. **torreana.** Branches erect. Fl. on short stalks. Spines weak, spreading. Crest 0. L. scabrous, pinnatifid; upper lanceolato-linear, denticulate. **b.** Monte Gargano.

63. **Calcitrapa.** Much and diffusely branched. Fl. among the upper L. Spines firm, channeled above. L. pinnatifid. Segm. ✓ linear, acute, dentate. Crest 0. **a. b.** 7–9. *Uncult.*

β. *autumnalis.* Lower L. bipinnate. Lyons. Montpellier.

64. **myacantha.** Diffusely branched. Fl. among the upper L. Appendages ovato-lanceolate. Spines firm. L. undivided, lineari-lanceolate, somewhat asper. Crest 0. Vincennes near Paris. *Not now found.*

65. **macroacantha.** "Crest 0. Central Spine of Phyll. very strong, with 2 or 3 small ones on each side. Inner Phyll. scariose at top, obtuse. Lower L. oblongo-lanceolate, acutely and irregularly inciso-serrate; upper lineari-lanceolate, spinuloso-serrulate. **a.** 6, 7. *Sandy uncult.* Palermo, all' Acqua Santa."—Guss.

66. **Pouzini.** Diffusely branched. Spines firm, with 3 rather distant Spinules on each side of the base. Outer Seeds without, inner with, a short crest. L. lineari-lanceolate, inciso-dentate or pinnatifid. **b.** *Dry open.* s. Fr.

67. **calcitrapoides.** Branches divaricate, hairless. Fl. among upper L. Spines firm, channeled. L. pinnate. Segm. lanceolate, acute, serrulate. A short Crest to all the Seeds. **b.** 7, 8. s. Fr. ? Savona.

v. *Spines palmate: the central one not greatly larger than the others. Fl. purplish.*

68. **sphærocephala.** Diffuse. Fl. bracteate. ✓ Spines 5, somewhat spreading. Outer

Seeds without crest. L. auricled, not decurrent, amplexicaul, oblong, inciso-dentate; lower pinnatifid. **p.** 5. *Sandy shores.* It. Sic. Cors. Sardinia.

69. **aspera.** Fl. bracteate. Spines 3–5. Seeds all crested. L. not decurrent, nearly all pinnatipartite, with large blunt teeth. **p.** 6–9. *Uncult.* s. Eur. *The Spines seem to be sometimes erect and sometimes spreading, or even reflexed.*

70. **Isnardi.** Fl. bracteate. Seeds all crested. A large portion of upper L. linear, quite entire. **p.** 6–8. Guernsey. s. Fr.

71. **sonchifolia.** Erect. Fl. bracteate. Spines 5, somewhat reflexed. Crest very short. L. oblong, amplexicaul, semidecurrent. Teeth mucronate, spinescent. L. stalked, undivided. **p.** 4, 5. *Sandy shores.* Nap. Nice. Prov. n. Sicily.

β. *auriculata*, Pers. L. with broad auricles.

72. **napifolia.** Erect. Fl. sessile among upper L. Spines erect, nearly parallel. Stem-L. very decurrent, lineari-lanceolate; lower pinnatifid. Root-L. lyrate. **a.** 5–7. *Open barren.* Rome. Cors. Apulia. Sic. Sard.

Not well known.

73. **crassifolia,** Bertol. Hairless. Stem furrowed, nearly simple. L. quite entire; the lower obversely lanceolate. Cal. turbinate. Phyll. ovate, naked, striate, quite entire: the outer acute; the inner obtuse. Crest rusty white, longer than the seed. Malta.

74. **Stoebe,** Linn. L. pinnatifid, linear, very entire. Phyll. oblong, ciliate. Aust.? Marseilles?

75. **peregrina,** Linn. L. lanceolate, stalked, toothed at base. Phyll. setaceo-spinose. s. Europe.

501. GALACTITES.

1. **tomentosa.** L. pinnatifid. Hoary beneath, marked with white above, without hairs. Segm. spinose. **a. b.** 5, 6. *Coasts.* Mdt.

Tribe V. *XERANTHEMEÆ.*

502. XERANTHEMUM.

1. **annuum.** Shafts of Crest of complete Flts. 5, falling very short of chaff of receptacle. Flts. about 100. Phyll. mucronate, quite hairless: inner radiant. **a.** 5, 6. *Dry stony.* s. Eur. s. e. G.

2. **inapertum.** Shafts of Crest of complete Flts. 5, somewhat exceeding chaff of receptacle. Fl. 30–40. Phyll. hairless; inner somewhat longer, hardly radiant. **a.** 6. *Open rocky hills.* Vall. *Coasts of* Mdt.

3. **cylindraceum.** Shafts of Crest of complete Flts. 8–10, far exceeding chaff of receptacle. Fl. 10–12. Cal. ovoideo-oblong. Phyll. woolly at back; inner somewhat longer, hardly radiant. **a.** 5, 6. *Open dry.* mdt. Europe.

Tribe VI. *CALENDULEÆ.*

503. CALENDULA.

1. **officinalis.** All Seeds curved, muricate on the back; outer somewhat larger, crested, slightly lengthened. Lower L. spatulate; upper cordato-lanceolate, amplexicaul, somewhat dentate. **a.** 7, 8. *Fields.* s. Eur. *Escaped from gardens.*

2. **maritima.** Villous, viscid. Outer Seeds curved, truncate, shorter than calyx, hardly muricate; inner nearly annular, muricate on the back. Lower L. obovate, attenuate; upper lanceolate, semiamplexicaul. **a.** Nearly all the year. Trapani.

3. **arvensis.** All Seeds curved, rostrate, twice as long as calyx, echinate on the back; innermost narrow. Lower L. oblongo-spatulate, entire; upper cordato-lanceolate, amplexicaul, somewhat dentate. **a.** 5–8. *Fields.* m. and s. Europe.

β. *bicolor.* Disc dark red. Rays orange. Sicily.

4. **parviflora.** Outer Seeds curved, winged, hardly twice as long as calyx; some echinate and with a short beak, others truncate and nearly smooth; innermost terete, annular, somewhat margined. Lower L. oblong, attenuate, entire; upper lanceolate, semiamplexicaul, dentate. **a.** 11–5. *Fields.* Sic. *Intermediate between Sp.* 3 *and* 5.

5. **sicula.** Outer Seeds slightly curved, echinate on the back, crested internally at base and summit. Middle Seeds subrotund, broadly winged, truncate; innermost boat-shaped, somewhat winged, rugoso-granulate on the back. **a.** 12–4. *Calc. hills.* s. Sic.

6. **fulgida.** "Outer Seeds long, incurved (rarely straight), crested on the back, without a margin (or occasionally with an irregular margin, truncate and toothed at top); inner boat-like, with an entire scariose margin. L. remotely denticulate, somewhat undulate, spatulate: lower stalked; upper amplexicaul. Rays 2 or 3 times as long the phyllaries, which are coloured at top. **a.** 12–4. *Grassy coasts.* Sic. and Islands."—Guss. Calab.

Tribe VII. *AMBROSIEÆ.*

504. XANTHIUM.

✓ 1. **macrocarpum.** Fruit oval-oblong. Beaks 2, curled round, hispid at base. **a.** 7–9. s. Fr. It. Ist. Vienna.

2. **Strumarium.** Fruit oval. Beaks 2, hooked at top. Base straight and downy. **a.** 7–10. *Rubbish and waysides.* ✓

3. **spinosum.** Fruit with a single straight beak. Tripartite Spines at base of L. **a.** 7, 8. *Rubbish and roadsides.* s. Eur. ✓

505. AMBROSIA.

1. **maritima.** Villous and hoary. L. bipinnate. Lobes obtuse, occasionally with a single tooth on each side. Fruit with 4–5 straight horns. **a.** 7–9. *Shores.* Italy. ✓

LVII. LOBELIACEÆ.

Odd Segment of Calyx anterior. Corolla irregular, of 1 petal, inserted on the calyx. Stamens 5, growing on the Germen. Stigma surrounded by a membranous cup or fringe.

506. LOBELIA.

✓ 1. **Dortmanna.** L. linear, entire, of 2 longitudinal cells. Stem nearly naked, simple. **p.** 6, 7. *Mountain lakes* in Br. *Lakes and marshes in a low country.* n. G.

✓ 2. **urens.** Lower L. obovate, somewhat toothed; upper lanceolate, serrate. Stem somewhat branched. Fl. in terminal racemes. **p.** 7, 8. *Moist.* Devon. *rare.* w. Fr.

507. LAURENTIA.

1. **Michelii.** With a Stem. Leaf longer than its stalk. Lateral Fl.-stalks solitary; terminal usually in pairs. **a.** 5. *Moist sea-shores.* Fiumicino. Sard.

2. **tenella.** Nearly stemless. L. usually shorter than its stalk. Fl.-stalks nearly from root, solitary. **p.** 5, 6. *Moist grassy.* Perdas di Foga, La Maddalena, both in Sard. ✓

LVIII. CAMPANULACEÆ.

Odd Segment of Calyx posterior. Corolla generally regular, of 1 petal, inserted on the calyx. Stamens 5, growing on the Germen. Stigma not surrounded by a membrane.

508. JASIONE.

✓ 1. **montana.** Root simple, producing many stems. L. lineari-lanceolate, undulate. Fl.-stalks long, naked. **a.** 6, 7. *Sandy.*

β. major. Large, firm, erect.

γ. littoralis. Stems decumbent.

✓ 2. **perennis.** Root creeping. Stem single. L. of Rosettes obovate. Stem-L. oblong, flat, entire. Fl.-stalks long, naked. **p.** 6–8. *Rocky pastures.* c. Fr. w. G.

✓ 3. **humilis.** Plant creeping and cespitose. L. of Rosettes obovate. Stem-L. scattered. Fl.-stalks very short. **p.** 8. *High pastures.* Pyrenees.

509. PHYTEUMA.

A. *Umbellate.*

1. **comosum.** L. toothed. R.-L. reniform. Bracts numerous, exceeding Umbel. **p.** 6, 7. *High rocks.* Carn. s. Tyr. Mte. Baldo. ✓

B. *Flowers sessile. Head globose or hemispherical when in flower.*

i. *Bracts numerous, broad, nearly equal.*

2. **pauciflorum.** Heads 5-flowered. L. linear or obovato-lanceolate. Bracts roundish ✓

ovate, shorter than head, ciliate, *entire at top.* **p.** 7, 8. *Very high.* Alps. Pyr.

β. *globularifolium.* Bracts entire at base, toothed at top. Aust.

3. **hemisphæricum.** Heads 10-15-flowered. L. nearly entire, linear or lanceolato-linear. Bracts ovate, acuminate, ciliate, entire. **p.** 7, 8. *Very high.* Alps. Cev. Pyr.

4. **humile.** Heads 10–15-flowered. L. linear or lineari-lanceolate; the upper remotely toothed. Outer Bracts prolonged on an ovate base; sharply toothed and ciliate with short, somewhat reflexed hairs, about equalling flowers. **p.** 7, 8. *Very high rocks.* On the Raefel above Zermatten, and on the Mori above Macugnana, Vall. s. Tyrol.

5. **serratum.** "Hairless. L. and Bracts lanceolate, remotely serrate, not ciliate, about equalling flowers. **p.** 6, 7. *Mountains.* Corsica."—Bert. *Except in the want of hairs, this seems closely to resemble* P. humile.

6. **Sieberi.** Heads about 15-flowered. L. crenate: those of barren shoots ovate or ovato-lanceolate, on long stalks; upper sessile, prolonged on an ovate base. Outer Bracts ovate, acuminate, coarsely dentate. **p.** 7, 8. *Very high.* Tyr. Carn. Apenn.

7. **orbiculare.** Heads many-flowered. Root-L. stalked, cordato-lanceolate, crenate. Bracts prolonged on a broadly ovate base, acute. **p.** 6–8. *Pastures.*

ii. *Bracts few, narrow, unequal.*

8. **Scheuchzeri.** L. ovato-lanceolate, crenato-serrate. Stem-L. lineari-lanceolate, remotely serrate: those of barren shoots cordate. Outer Bracts somewhat deflexed, 1½–2 *in. long.* **p.** 7, 8. *Mountains.* Glaris. Vall. Tyr. Carn.

β. *Charmelii.* L. somewhat broader. Bracts shorter. w. Alps. Pyr.

C. *Flowers sessile. Head lengthened even in flower; afterwards cylindrical.*

9. **Michelii.** Heads oval or subrotund in flower, afterwards cylindrical. L. remotely crenato-serrulate. Bracts linear, not exceeding flowers. **p.** 7, 8. *Hill meadows.* s. of Alps.

α. *betonicifolium.* Root and lower L. cordate at base. Spike of Fl. ovoid. Alps.

β. *Balbisii.* Root and lower L. broadly cordate. Spike of Fl. oblong. Val Pesco in Pdm.

γ. *persicifolium.* Lower L. oblongo-lanceolate. Carinthia.

δ. *scorzonerifolium.* Lower L. lanceolate, on long stalks. Vall.

ε. *angustissimum.* Lower L. linear, on short stalks. Pdm.

10. **veronicifolium.** "Stigmas 2 or 3. Lower L. cordato-lanceolate, simply dentato-serrate; upper lineari-lanceolate, serrulate. Spike cylindrical, acuminate. Bracts setaceous, smooth. **p.** Prov. of Salzburg."—DC. *Not in Koch.*

11. **nigrum.** Spike oblong. L. simply crenato-serrate: lower stalked, cordate; upper linear, serrulate. Bracts linear. *Fl. dark violet.* **p.** 5, 6. *Shade.* m. and s. Eur.

12. **spicatum.** Spike oblong. L. doubly crenato-serrate: lower stalked, cordate; upper linear (ovato-lanceolate, DC.). Bracts lineari-subulate. *Fl. white or yellowish.* **p.** 5, 6. *Shade.* m. and s. Eur. *Not on the Rhine.*

13. **Halleri.** Spike of Fl. obovoideo-oblong. L. coarsely doubly serrate: lower stalked, ovate; upper lanceolate. Bracts linear, acuminate. **p.** 6, 7. *Mountain pastures.* Alps. Apenn. Riesengeb.

D. *Flowers in spike-like racemes.*

14. **limoniifolium.** Branched. Root-L. lanceolate, repando-dentate, stalked, undulate, denticulate. Stem-L. few, passing into small, entire, subulate bracts. Rac. long, interrupted. **p.** 4, 5. *Sea-shore.* Bari. Otranto.

15. **canescens.** Scabrous. Stem simple. Lower L. ovate, attenuate, crenato-serrate; upper lanceolate, nearly entire. Rac. long, sometimes branched. Bracts lineari-lanceolate. **p.** 7–9. *Thickets.* Between Cilli and Lichtenwald, Lower Styria.

510. CAMPANULA.

A. Bays of Calyx with a reflexed appendage.
- **i.** Capsule 5-celled. Stigmas 5. Sp. 1.
- **ii.** Capsule 3-celled. Stigmas 3.
  - **a.** Flowers solitary in forks of stem. Sp. 2.
  - **b.** Flowers terminal. Sp. 3–7.

B. Bays of Calyx without appendage.
- **i.** Capsule opening at base.
  - **a.** Flowers sessile. Sp. 8–13.
  - **b.** Flowers stalked, erect.

* Corolla rotate. Sp. 14–16.

** Corolla funnel-shaped. Sp. 17, 18.

*** Corolla campanulate. Sp. 19–23.

c. Flowers nodding, stalked, not in forks of stem.

* L. of Root and of barren shoots much broader than those of stem. Sp. 24–32.

** L. almost all on stem. No barren shoots. Sp. 33–38.

d. Flowers axillary and in forks. Sp. 39.

ii. Capsule opening above middle. Sp. 40–46.

A. *Calyx with appendages in the Bays.*

i. *Capsule 5-celled. Stigmas 5.*

✓ 1. **Medium.** Erect. Rac. lax. Root-L. on long stalks. Cor. campanulate, hairy on veins. **b.** 5, 6. *Hilly.* s. Fr. n. It.

ii. *Capsule 3-celled. Stigmas 3.*

a. *Flowers solitary in the forks of the stem.*

✓ 2. **dichotoma.** Fl. stalked, in forks of stem, or opposite L. L. sessile, oblong. **a.** 4, 5. *Coasts.* s. It.

b. *Flowers terminal.*

✓ 3. **Allionii.** Stem mostly 1-flowered. L. lineari-lanceolate, retrorsely ciliate: primary L. often spatulate. Cor. campanulate, hairy. **p.** 7, 8. *High.* w. Alps.

✓ 4. **sibirica.** Erect. Fl. numerous, panicled. Stem-L. lanceolate. Segm. of Cal. subulate. Appendages as long as germen. Cor. hairless at top. **b.** 5, 6. *Grassy hills.* Pdm. s. e. G.

✓ 5. **barbata.** Rac. few-flowered. Stalks 1-flowered, recurved. L. oblongo-lanceolate, obtuse. Stem-L. 1 or 2. Segm. of Cal. acute, about one-fourth of corolla. Cor. densely bearded. Appendage nearly as long as germen. **p.** 7, 8. Alps.

✓ 6. **speciosa.** Fl. in a pyramidal raceme. Stalks 1-flowered, recurved. Segm. of Cal. half as long as corolla. Appendages ovato-triangular, half as long as segments. L. crenato-repand. Root-L. lineari-lanceolate. Stem-L. linear. **p.** 7, 8. Pyr.—DC.

7. **alpina.** Fl. in a pyramidal raceme. Stalks 1-flowered, recurved. Segm. of Cal. nearly as long as campanulate corolla. Appendages very small, sometimes wanting. L. oblongo-linear, woolly. **p.** 6, 7. *High stony.* c. Alps.

B. *Without appendages to calyx. Capsule 3-celled.*

i. *Capsule opening at the base.*

a. *Capsule erect, sessile or nearly so.*

8. **foliosa.** Fl. in a terminal head. Segm. of Cal. very narrow and acuminate, ciliato-denticulate. Cor. tubular, hairy within. L. doubly serrate; the lower somewhat cordate, acute, on long hafts. Bracts ovate, acuminate, equalling flowers. **p.** 7, 8. *Mountains.* K. Naples.

9. **petræa.** Fl. in clusters, crowded at ends of branches. Segm. of Cal. oblong, obtuse. Cor. campanulate. Style exsert. L. grey, velvety beneath. **p.** 8. It. Tyr. Monte Baldo. Les Escalles d'Eglon in Prov.

✓ 10. **glomerata.** Stem terete. Clusters lateral and terminal. Bracts ovate, acuminate (not very acute), shorter than flowers. L. ovate or cordate; lower on winged stalks, crenate. Segm. of Cal. subulate, somewhat obtuse. **p.** 5–7. *Pastures.*

β. speciosa, Hornem. Fl. very large.

γ. nicæensis. L. approximate, acute. Fl. forming a dense spike.

δ. elliptica, Kit. L. elliptic. Bracts very large.

ε. cervicarioides, R. and S. Stem flexuose, a yard high.

✓ 11. **Cervicaria.** Hispid. Stem furrowed. Clusters terminal and lateral. Segm. of Cal. oblong, obtuse, equalling half funnel-shaped flowers. Bracts ovate, acute, somewhat shorter than flowers. L. lanceolate, attenuate, finely crenulate. **b.** 7, 8. *Thickets.* m. and n. Europe.

12. **spicata.** Fl. solitary or ternate, in a long, interrupted spike. Cor. funnel-shaped. L. oblongo-lanceolate; lower attenuate. **b.** 6, 7. *Dry stony. Lower parts of the* s. Alps.

✓ 13. **thyrsoidea.** Fl. in a crowded, ovoideo-oblong spike. Segm. of Cal. ovato-lanceolate, acuminate. Lower L. lanceolate, obtuse. **p.** 7, 8. *Mountain pastures.* Alps. Jura.

b. *Capsules on erect stalks. Perennial.*

* *Corolla rotate. Style exsert.*

14. **elatinoides.** Cottony. Stem simple. Fl. in a dense raceme. Germen ovoid. Segm. of Cal. lineari-subulate. Segm. of Cor. downy

externally. L. stalked, oblong, cordate at base, acutely dentate. **p.** 7, 8. *Stony mountains.* n. w. Lomb.

15. **Elatines.** Pubescent. Stems simple, procumbent, tufted. Fl. in a lax raceme. Germen spherical. Segm. of Cal. lineari-lanceolate. Root-L. cordate, acutely dentate, on long stalks; upper cordate, acuminate, on short stalks. **p.** 5, 6. *Fissures of rocks.* Pdm. Como. Dau. Cherso.

16. **garganica.** Diffuse. Stem 1–2-flowered, in a lax raceme. Segm. of Cal. spreading, unequal. L. unequally serrate; lower reniform, on long stalks; middle long, acute, hafted. **p.** 5, 6. *Fissures of rocks.* Istria. Monte Gargano.

** *Corolla funnel-shaped.*

17. **morettiana.** Hairy. 1–2-flowered. Segm. of Cal. lanceolate. L. simply serrate; lower cordate, on long stalks. **p.** 7, 8. *Fissures of rocks.* s. Tyrol.

18. **Raineri.** Branches 1–3-flowered. Seg. of Cal. broadly lanceolate, acuminate, erect, remotely denticulate. Lower L. smaller, obovate, nearly sessile; upper ovate, remotely serrate. **p.** 7, 8. *Mountains.* Lake of Como. Brixen.

*** *Corolla campanulate.*

19. **fragilis.** Diffuse. Corymb lax. Segm. of Cal. lineari-lanceolate, acuminate, erect, equalling the very open corolla. Root-L. reniform, dentate, on long stalks. Stem-L. ovate and lanceolate, nearly all stalked. **p.** 6. *Marit. rocks.* K. Nap. Sic.

20. **floribunda.** Fl. corymbose. Segm. of Cal. acuminate, half as long as the broadly campanulate corolla. L. nearly all stalked, broadly cordate, acute, coarsely serrato-dentate. Style exsert. Caps. ovoid. **p.** 8. *Calcareous rocks.* Finale, Capo di Noli in w. Liguria.

21. **Tenorii.** Smooth, decumbent. Fl. in a somewhat corymbose raceme. Segm. of Cal. lineari-lanceolate, half as long as the broad, campanulate corolla. L. coriaceous, serrate. Root-L. somewhat cordate, on long stalks. Stem-L. ovate, acute, stalked. Caps. spherical. **p.** 6, 7. *Stony.* K. Nap.

22. **pyramidalis.** Smooth, erect. Fl. numerous, in a pyramidal raceme. Cal. Segm. acuminate, spreading, half as long as the broad, campanulate corolla. L. glanduloso-dentate: lower somewhat cordate, on long stalks; upper ovato-lanceolate. **b.** 7–9. *Walls and rocky hills.* adr. G. Ven.

23. **macrorhiza.** "Root thick. Stem ascending. Fl. terminal and axillary. Buds erect. Segm. of Cal. acuminate, spreading, half as long as campanulate corolla. Root-L. small, reniform, dentate, on long stalks; upper sessile, linear, acuminate. **p.** *Rocks.* Mont Cousson in Prov. Nice. *Has altogether the appearance of* C. rotundifolia, *but is distinguished by the erect Capsule, reflexed Segm. of Cal., and thick Root.*"—DC.

c. *Flower-stalks recurved.*

* *Root-L. and L. of barren shoots much broader than those of Stem.*

24. **rotundifolia.** Segm. of Cal. subulate, erect, reaching to one-third of ovate or subturbinato-campanulate corolla. Fl. panicled. Root-L. reniform or cordate, dentate, on long stalks. Stem-L. linear or lanceolate, entire. **p.** 6–9. *Heaths, thickets, and dry pastures. Varies in in being smooth, or more or less hairy, or even velvety.*

25. **pusilla.** Segm. of Cal. subulate, erect. Cor. hemispherico-campanulate. Root-L. reniform or cordate, serrate, on long stalks. Lower stem-L. elliptic. Rac. few-(3–6)-flowered. **p.** 6–8. *Rocks and gravel of torrents.* Alps.

β. *pubescens.* Covered everywhere with short hairs.

26. **Scheuchzeri.** Segm. of Cal. subulate, erect. Stem 1–6-flowered. Root-L. ovate or cordate, on long stalks. Stem L. lineari-lanceolate; upper quite entire. **p.** 7, 8. *Mountain pastures.* Alps, &c. *When smooth, it is also* C. linifolia *of DC.; when hairy,* C. Valdensis *of All.* (C. uniflora *of Vill.*)

27. **nemorosa.** "Stem simple, erect, rodlike. Root-L. on long stalks, cordate, ovato-oblong, remotely crenate. Stem-L. sessile, lanceolate, repando-sinuate. Rac. lax. Segm. of Cal. subulate, half as long as funnel-shaped corolla. **p.** *Woods.* Aust. and Mor." *Resembles* C. rhomboidalis β."—DC.: *not in Koch.*

28. **carnica.** Stem weak, few-flowered. Segm. of Cal. lineari-setaceous, reflexed, equalling corolla. Root-L. cordate, dentate, on long stalks; uppermost linear, very narrow. **p.** 6, 7. *Mountain rocks.* Carn. Carinthia.

29. **cæspitosa.** Segm. of Cal. subulate. Cor. somewhat contracted below the divisions. Stalks 1–3-flowered. Root and lower L. obovate, on a haft, hardly as long as L. Upper-

most L. linear, entire. **p.** 7, 8. *Calcareous rocks.* s. e. G.

30. **trichocalycina.** Segm. of Cal. setaceous, reflexed. Rac. secund, nearly equalling funnel-shaped corolla. Root-L. on stalks shorter than L., small, roundish; others oblong, unequally serrate. **p.** 7. Cal. Madonie.

31. **pulla.** Segm. of Cal. subulate. Stem 1-flowered. L. elliptic, three times as long as stalk: lower obtuse; upper acute. **p.** 7, 8. *Mountain pastures.* s. e. G.

✓ 32. **excisa.** Segm. of Cal. subulate. Stem 1–3-flowered. L. linear, entire; lower somewhat cuneate, subdenticulate, attenuate into short stalks. Cor. ventricoso-campanulate. Seg. narrowed at base and separated by a rounded sinus. **p.** 7, 8. *Very high rocks.* Pennine Alps.

** *L. nearly all on Stem. No barren shoots.*

✓ 33. **rhomboidalis.** Simple, erect. Fl. in a lax secund raceme. Segm. of Cal. subulate, erect, equalling campanulate corolla. L. sessile, ovate, acute, serrate; lowest on short stalks. **p.** 6. *Mountains.*

β. lanceolata. L. crowded, lanceolate, nearly entire.

34. **Alpini.** Erect. Pan. pyramidal. Segm. of Cal. lanceolate, somewhat spreading, equalling one-fourth of campanulate corolla. L. oblongo-lanceolate, acuminate, sharply and somewhat unequally serrate. Style exsert. **p.** 6, 7. e. G. Venetian Alps. *rare.*

✓ 35. **latifolia.** Stem nearly round. Fl. axillary, solitary. Segm. of Cal. erect, ovato-lanceolate. Cor. campanulate. Root-L. ovate or cordate, on short stalks, coarsely doubly serrate. **p.** 7, 8. *Moist shade.* n. and m. Europe.

36. **bononiensis.** Rough. Stem erect, round. Fl. small, in a long raceme. Segm. of Cal. acuminate. Cor. funnel-shaped. L. crenato-serrate, hoary beneath; lower cordate, on long stalks. **p.** 7, 8. *Dry meadows and borders.* e. G. s. Tyr. n. It.

✓ 37. **rapunculoides.** Root creeping. Stem bluntly angular. Fl. in a terminal, secund raceme. Segm. of Cal. of Fr. reflexed. Lower L. cordate, acuminate, on long stalks; upper lanceolate. **p.** 7, 8. *Fields and thickets.* m. Europe.

✓ 38. **Trachelium.** Stem sharply angular. Stalks axillary, 1–3-flowered. Segm. of Cal. erect. Cor. campanulate. Lower L. cordate, on long stalks, doubly serrate; upper oblong, sessile. **p.** 7, 8. *Woods and thickets.*

d. *Flowers in forks of dichotomous stem!*

39. **Erinus.** Fl. nearly sessile. Lower L. obovato-oblong, attenuate into short hafts. ✓ Floral L. opposite. **a.** 6. *Dry stony. Coasts of* Mdt.

ii. *Capsule opening at or above the middle.*

40. **Lorei.** Erect, branched. Cor. nearly rotate. Segm. of Cal. very acuminate, denticulate at base, as long as corolla. Fl. terminal, solitary, on long stalks. Caps. deeply furrowed, strigose. Lower L. spatulate; upper lanceolate, acute. **a.** 5, 6. Monte Baldo.

41. **persicifolia.** Stem erect, nearly simple. Cor. broad, campanulate. Segm. of Cal. ✓ lanceolate. Rac. few-flowered. Root-L. oblongo-obovate, attenuate into haft. Stem-L. lineari-lanceolate, sessile. **p.** 6, 7. *Woody hills.* m. and s. Eur.

42. **cenisia.** Stems many, 1-flowered. L. obovate, entire, ciliate at base, otherwise hair- ✓ less. Cal. hispid. Segm. lanceolate, parabolic, 6- or 5-partite, smooth. **p.** 7, 8. *Very high.* Pennine Alps.

43. **Zoysii.** Tufted. Stem erect, few-flowered. Cor. oblong, campanulate. Segm. densely bearded. Segm. of Cal. subulate. L. ✓ quite entire: lowest ovate, on stalks as long as themselves; middle spatulate; upper lineari-oblong. **p.** 7, 8. *High rocks.* Carinthia. Styria.

44. **pyrenaica.** Stem erect, 1-flowered. Cor. funnel-shaped. Segm. of Cal. subulate, spreading, entire, somewhat shorter than corolla. Root-L. subrotund, on short stalks. Stem-L. lanceolate. Pyr.

45. **patula.** Pan. spreading. Fl. erect. Segm. of Cal. subulate, equalling half funnel- ✓ shaped corolla. Root-L. obovate, crenate. Stem-L. lineari-lanceolate, sessile. **b.** 5–7. *Moist borders.* m. and s. Eur. Eng. on red marl.

46. **Rapunculus.** Pan. racemose. Seg. ✓ of Cal. subulate, somewhat shorter than funnel-shaped corolla. Root-L. oblongo-obovate, attenuate. Stem-L. lineari-lanceolate. **b.** 5–8. *Dry meadows, thickets, &c.* m. and s. Eur.

511. WAHLENBERGIA.

1. **nutabunda.** Stem erect or ascending. L. lanceolate, acute, sharply toothed. Fl. pani-

cled, on long stalks. Cal. 5-partite. **a.** 3, 4. *Dry hills.* Cal. Sard.

✓ 2. **hederacea.** Stems filiform, prostrate. L. palmately 5-lobed. Fl. solitary. **p.** 7, 8. *Boggy.* n. and m. Eur.

512. EDRAIANTHUS.

1. **tenuifolius.** L. linear, setoso-ciliate. Bracts ovate, lineari-acuminate on an ovate base, setoso-ciliate. Stem hairy. **p.** 7, 8. *Stony.* Trieste. Fiume.

2. **Kitaibelii.** L. narrow lanceolate, ciliate with soft hairs. Bracts ovate, with 1 or 2 teeth on each side, ciliate with soft hairs. Stem downy. **p.** 7. *Stony mountains.* Schneeberg in Karstgebirge.

513. ADENOPHORA.

1. **suaveolens.** "Stem erect. L. oblong; lower somewhat stalked. Panicle effuse. Cal. glanduloso-subserrate. Style exsert. **p.** 7, 8. *Woods and thickets.* Boh. Sil. *rare.*"—Koch. Ven. Alps.

514. SPECULARIA.

1. **falcata.** Fl. solitary. Segm. of Cal. linear, recurved, twice as long as corolla, and nearly as long as germen, which is not contracted below the flower. **a.** 5. *Fields and banks.* Prov. adr. G. It.

2. **Speculum.** Fl. solitary and in threes. Segments of Cal. lineari-lanceolate, straight, spreading, about as long as corolla, half as long as germen, which is contracted below the flower. **a.** 6, 7. *Fields.* m. and s. Eur. ✓

β. hirta. Grey, pubescent. It.

3. **hybrida.** Fl. solitary, approximate. Segm. of Cal. ovato-lanceolate, twice as long as very short corolla, and about one-third of germen, which is contracted below the flower. **a.** 6, 7. *Fields.* ✓

515. TRACHELIUM.

1. **cæruleum.** L. ovate, acute, coarsely serrate, on short stalks. Caps. 3-celled. **p.** 5, 6. *Rocks and walls.* s. It. ✓

LIX. VACCINIEÆ.

Calyx superior. Corolla monopetalous, 4–5-lobed. Stamens 8–10, in front of an epigynous disc, and not attached to the corolla. Anthers 2-celled, opening by pores.

516. VACCINIUM.

A. *Flowers in drooping racemes.*

1. **Vitis-idæa.** Evergreen. Anthers unarmed. Style exsert. L. obovate, revolute, minutely dentate, dotted beneath. Cor. campanulate. **w.** 6. *Mountain woods and heaths.* n. Europe.

B. *Flowers solitary or in pairs. Anthers with two awns.*

2. **intermedium.** Evergreen. Young Branches angular. L. oval, serrate, on short stalks. Stalks 1-flowered, solitary or in pairs, somewhat racemose. Style included. **s.S.** 5, 6. *Moist pine-wood* near Berlin.

3. **uliginosum.** Deciduous. Branches *brown*, round. L. obovate, entire, smooth. (Stalks several together, 1-flowered, Sm.) Cor. urceolate. **s.S.** 5, 6. *Hill bogs.* ✓

4. **Myrtillus.** Branched, *green*, angular, L. ovate, serrate, quite smooth, deciduous. Stalks solitary, 1-flowered. Cor. ovate. **w.** 5. *Woods and heaths.* ✓

517. OXYCOCCUS.

1. **palustris.** Creeping. Branches filiform. L. oval, quite entire, white beneath. Margin revolute. Fl.-stalks long, terminal. **w.** 6–8. *Wet bogs.* ✓

LX. ERICACEÆ.

Calyx inferior. Corolla of 1 petal, 4–5-cleft. Stamens 8–10, on an hypogynous disc, and not attached to the corolla. Anthers 2-celled, opening by pores, and sometimes awned. L. without stipules.

518. ARBUTUS.

✓ 1. **Unedo.** Bark rugged. L. oblongo-lanceolate, obtusely serrate, hairless, shining. Pan. nodding. Fr. warty, globose. **s.T.** 4, 5. *Rocky.* It. w. France. Ireland. Carn. Istr.

519. ARCTOSTAPHYLOS.

✓ 1. **alpina.** Procumbent. L. deciduous, obovate, acutely serrate. Rac. terminal. Bracts ovate, broad, ciliate. **s.S.** 5–7. *Dry stony mountains.* Alps.

✓ 2. **Uva-Ursi.** Procumbent. L. coriaceous, persistent, obovate, quite entire. Rac. terminal. Bracts obtuse, very small. **s.S.** 5, 6. *Rocks and stony heaths.* m. and n. Eur.

520. ANDROMEDA.

✓ 1. **polifolia.** Rac. terminal. L. alternate, lineari-lanceolate, revolute, glaucous beneath. **w.** 6, 7. *Bogs.* m. and n. Eur.

521. CASSANDRA.

1. **calyculata.** L. ovato-oblong, flat, scaly on both sides. Segm. of Cal. hardly acute. **s.S.** 4, 5. *Bogs.* Greifswald in Pom.

522. CALLUNA.

✓ 1. **vulgaris.** L. opposite, tiled in 4 rows. Bracts 6, close to calyx: the 4 outer leafy. **s.S.** 8. *Heaths, &c.* n. and m. Eur.

523. ERICA.

A. *Anthers confluent with top of Filaments. No Appendage.*

1. **occidentalis.** Stigma minute. Anthers nearly included. Cor. urceolate. Bracts smooth, remote. A broad, blunt midrib under some of L. **s.S.** 4, 5. w. Ir. w. Fr. *E. mediterranea*, Linn.

✓ 2. **carnea.** Stigma minute. Anthers protruded. Cor. urceolato-campanulate. Bracts small, remote. L. with a narrow, acute midrib underneath. **s.S.** 4, 5. *Mountains.* Sw. and n. It. to Sil.

β. *herbacea.* Fl. included in the green calyx, 9–10.

B. *Anthers placed laterally on top of Filaments.*

i. *Anthers without any Appendage.*

✓ 3. **ciliaris.** Cor. ovoid. Border small. Mouth oblique. Sepals awned. Fl. in racemes. Branches glanduloso-hispid. L. in threes, elliptic. **s.S.** *Heaths.* w. Eur.

✓ 4. **multiflora.** Anthers oblong, cloven. Cor. ovoid. Border smooth. Mouth direct. Sepals lanceolate, obtuse, quite entire. Fl. in racemes. L. in fours or fives, linear. **s.S.** 9, 10. *Calcareous rocks.* mdt. Fr. It.

✓ 5. **vagans.** Lobes of Anthers separate to base. Cor. ovoideo-campanulate. Border small. Mouth direct. Sep. ovate, finely ciliate, serrate. Fl. in racemes. L. in fours or fives, linear. **s.S.** 4–9 in different places. *Heaths and thickets.* Cornwall. s. Fr. adr. G. It.

✓ 6. **scoparia.** Border of globose Cor. nearly as long as tube. Sep. united at base. L. in threes, linear. **S.** 5, 6. s. and w. Eur. Bar le Duc.

7. **sicula.** Fl. in terminal umbels. Cor. urceolato-campanulate, hairy externally. Stigma small, capitate. L. in fours, thick. *Fl. and Fr. sometimes with* 5 *Div. and* 10 *Stamens.* **s.S.** 4, 5. *Rocks.* Trapani.

ii. *Anthers with Appendage at base.*

✓ 8. **Tetralix.** Fl. in terminal umbels. Cor. urceolato-ovoid. Sep. ovato-lanceolate, *downy.* Stigma capitate. *Germen downy.* L. in threes or fours, ciliato-hispid, with rounded margin. **s.S.** 7–9. *Peaty.* n. and w. Eur.

β. *Mackaii.* More branched. Sep. and Germen quite hairless.

9. **stricta.** Fl. in umbels. Sep. lanceolate, obtuse. Cor. oblongo-ovate. Germen hirsute. L. in fours, oblong, obtuse, fleshy, hairless. **s.S.** 5, 6. *Woody mountains.* Cors. Sard. K. Nap.

✓ 10. **cinerea.** Stigma capitate. Anthers awned, included. Cor. ovoid. Sep. lineari-lanceolate, acute. Fl. in a somewhat whorled raceme. L. in threes, linear, hairless, convex, with a furrow beneath. **s.S.** 6–8. *Heaths.* Br. Fr. *Only in one place in* G.

✓ 11. **polytrichifolia.** Stigma peltate. Anthers with a hispid awn at base. Cor. cylindrico-tubinate, about 4 times as long as ovate sepals. Fl. in racemes. L. in threes, linear, obtuse. **S.** 5. *Heaths.* w. Fr.

✓ 12. **arborea.** Stigma peltate. Anthers with a serrato-ciliate crest at base. Cor. campanulato-turbinate, about three times as long as ovate sepals. Fl. in racemes. L. in threes, linear. **S.** 4–6. *Thickets.* adr. G. It.

524. PHYLLODOCE.

✓ 1. **cærulea.** Fil. smooth, 3 times as long as anthers. Div. of Cal. lanceolate, acuminate. Stalks with glandular hairs. **s.S.** 6, 7. *Heaths.* Scotl. Bagnères de Luchon.

525. DABEOCIA.

✓ 1. **polifolia.** L. elliptic. Fl. in racemes. **s.S.** 6, 7. *Peaty.* Irel. Anjou *in one spot.* w. Pyrenees.

526. AZALEA.

✓ 1. **procumbens.** Procumbent, much branched. L. opposite, persistent, on short stalks. Fl.-stalks solitary, terminal. **s.S.** 7, 8. *High.* Sc. Alps. Pyr.

527. RHODODENDRON.

A. *Flowers in umbels. Corolla funnel-shaped. Stamens bent down.*

✓ 1. **ferrugineum.** Cal. short. Segments broadly ovate. L. covered beneath with scale-like glands, at last ferruginous. **s.S.** 7, 8. *Granitic rocks and pastures.* Alps, *common.* Jura and Pyr. *rare.*

2. **intermedium.** Segm. of Cal. oblongo-lanceolate. L. closely covered beneath with separate glandular dots, at length ferruginous, remotely ciliate. **s.S.** 7, 8.—Koch, *who gives no place.*

3. **hirsutum.** Segm. of Cal. oblongo-lanceolate. L. elliptic, with stiff cilia, otherwise hairless, with scattered dots beneath. **s.S.** 7, 8. *Calc. mountains.* Alps. ✓

B. *Corolla rotate. Stamens spreading.*

4. **Chamæcistus.** Segm. of Cal. lanceolate, acuminate; of Cor. calloso-mucronate. Caps. globose. L. elliptico-lanceolate, without glands beneath. **s.S.** 6, 7. *Calc. rocks.* e. Alps. ✓

528. LEDUM.

1. **palustre.** Stamens 10, exceeding corolla. L. linear. Margin revolute. **s.S.** 7, 8. *Boggy.* Als. n. e. G. ✓

LXI. PYROLACEÆ.

No hypogynous Disc. Seeds much smaller than the globose Aril in which they are included.

529. PYROLA.

A. *Flowers in racemes.*

1. **rotundifolia.** Stamens curved upwards. Style bent down, twice as long as stamens. Segm. of Cal. lanceolate, acute, recurved at top, half as long as corolla. **p.** 6, 7. *Moist sandy or rocky woods.* n. Eur.

2. **chlorantha.** Stamens curved upwards. Style bent down, twice as long as stamens. Segm. of Cal. short, obtuse, adpressed, one-fourth as long as corolla. **p.** 6, 7. *Woods.* Dau. Sw. G. *occ.*

3. **media.** Stamens incurved. Style bent down, twice as long as stamens. Segm. of Cal. ovato-lanceolate, acute. **p.** 6, 7. *Woods and heaths.* n. Eur. *occ.*

4. **minor.** Stamens incurved. Style straight, equalling stamens. Segm. of Cal. short, somewhat acute. **p.** 6, 7. *Woods and thickets.* n. Eur.

5. **secunda.** Rac. secund. Segm. of Cal. short, somewhat obtuse. Style prominent. **p.** 6, 7. *Mountain thickets.* n. Eur. ✓

B. *Flowers solitary.*

6. **uniflora.** Stalk terminal, 1-flowered, longer than stem. **p.** 6, 7. *High and cold woods, rare.* ✓

C. *Flowers in umbels.*

7. **umbellata.** L. somewhat cuneato-lanceolate, one-coloured. Bracts lineari-subulate. Fil. smooth. **p.** 6, 7. *Woods.* G. *rare.* ✓

530. MONOTROPA.

1. **Hypopitys.** Rac. many-flowered. Pet. denticulate. **p.** 7, 8. *Woods.* ✓

β. multiflora. Pet. and Stamens hairy.

COROLLIFLORÆ.

Plants furnished with an inferior Calyx, and a monopetalous, staminiferous Corolla.

LXII. EBENACEÆ.

Corolla 3–7-lobed, inserted on the calyx. Stamens usually 2, unequal, opposed to each Division of Corolla. Fruit of many 1- or 2-seeded cells. *Trees or Shrubs, with simple, undivided, alternate L. and no Stipules.*

531. DIOSPYRUS.

1. **Lotus.** L. ovato-oblong, acuminate, *of a different colour beneath,* marked with somewhat callous spots. Buds woolly within. **T.** 7, 8. *Warm hills.* Canton of Tessino. Rome, *hardly wild.*

532. STYRAX.

1. **officinalis.** L. ovate, villous beneath. Rac. simple, shorter than L. **S.** 4, 5. *Woods.* ✓ Prov. Nice. Tivoli. Frascati.

LXIII. JASMINEÆ.

Corolla 4–8-lobed, or none. Stamens 2. Germen superior, of 2 cells, each with 2 pendulous seeds. *Trees or Shrubs, generally with opposite L.*

533. OLEA.

✓ 1. **europæa.** L. lanceolate, quite entire, 2-*coloured.* Rac. axillary, compound. **T.** 5, 6. *Rocky.* It. *Escapes. The naturalized plant has a rounder Fr. and is sometimes spinescent.*

534. PHILLYREA.

1. **angustifolia.** L. lineari-lanceolate, nearly entire, acute. Drupe apiculate. **S.** 3–5. *Rocky thickets.* It. Prov.

✓ 2. **media.** L. ovato-lanceolate or oblong, mucronulate. Drupe apiculate. *Serratures various.* **S.** 4, 5. *Thickets.* s. Fr. It. Istria.

✓ 3. **latifolia.** Lower L. cordato-ovate, spinuloso-serrulate; upper oblong. Pedicels longer than flowers. Drupe obtuse, umbilicate. **S.** 4, 5. *Thickets.* s. Fr. It.

4. **stricta.** All L. flat, elliptic; the upper slightly and obtusely serrate. Interior Branches rod-like. Rac. dense, drooping; the Stalks shorter than flowers. Drupe obtuse, umbilicate. **S.** 3. *Woody hills.* It.—Bert.

535. LIGUSTRUM.

✓ 1. **vulgare.** L. elliptico-lanceolate. Pan. terminal, crowded. **S.** 5, 6. *Hedges and thickets: common.*

536. JASMINUM.

1. **officinale.** L. opposite, pinnate. Lts. acuminate. Div. of Cal. lineari-filiform. Climbing **S.** 7, 8. *Escapes. On walls and in vineyards.* s. Fr. s. G.

2. **fruticans.** L. alternate, ternate, or simple. Lts. somewhat cuneate, obtuse. Div. ✓ of Cal. linear, acute. Weak **S.** 5–7. *Calc. rocks.* Prov. Nice. s. Tyrol.

3. **humile.** L. alternate simple, ternate, or pinnate. Lts. ovato-oblong, somewhat acute. Div. of Cal. very short. **s.S.** 5, 6. Grasse in Prov.

537. SYRINGA.

1. **vulgaris.** L. cordate, acuminate. **S.** 4, 5. *Escapes.* Fr. *Woods* near Etampes. Germany.

538. FONTANESIA.

1. **phyllyreoides.** L. nearly opposite, lanceolate or obovate. Rac. compound, axillary, nodding. Stamens 2–4. Styles 1–4. **s.T.** 5. *Calc. hills between* Syracuse and Avola, Sic.

539. FRAXINUS.

A. *Flowers with Calyx and deeply 4-partite Petals.*

1. **Ornus.** Lts. elliptical or lanceolate, ✓

stalked, cuspidate, obtusely denticulate. Fl. panicled. **s.T.** 5. *Woods.* Als. Prov. s. G. Italy.

B. *Flowers naked.*

2. **parvifolia.** Lts. sessile, 3–7 pair, subrotundo-ovate or oblong, attenuate, quite entire at the base, sharply serrulate at top, mucronate. **s.T.** Sic. Il Pizzo, Cal.

3. **excelsior.** Lts. sessile, lanceolate, serrate. **l.T.** 4, 5. *Woods and hedges: common.*

β. heterophylla. Many of the L. simple.

LXIV. APOCYNEÆ.

Fruit of 2 follicles, each of 1 cell, bursting on the inside. Seeds imbricate, pendulous on margin of follicle. Styles 2, at base uniting in a common Stigma.

540. NERIUM.

1. **Oleander.** L. in threes, lanceolate: veins parallel. Div. of Cal. spreading. Teeth of Crown trifid. **S.** 7–9. *Beds of torrents near the sea.* Nice. Prov. Monte Argentario. Sic. Sard. Cors.

541. VINCA.

1. **major.** Procumbent, creeping. L. ovate or semicordate, ciliate. Stalks solitary, 1-flowered. Div. of Cal. long, bristle-shaped, ciliate. **p.** 5. *Woody hills.* s. and w. Fr.

2. **acutiflora.** Decumbent or ascending. L. ovate, attenuate at each end, hairless. Segm. of Cal. linear, narrow, hairless; (of Cor. obliquely ovato-acuminate, Bert.) **p.** 3, 4. *Hills.* Sarzana. Rome. Sard.

3. **minor.** Procumbent, creeping. L. elliptico-lanceolate, not ciliate. Stalks 1 flowered, solitary, axillary. Segm. of Cal. lanceolate, hairless. **p.** 5. *Bushy, and woods.*

4. **herbacea.** Stems many, procumbent, not rooting. Lower L. ovate; upper lanceolate. Div. of Cal. ciliate. Young L. rough on margin. **p.** 4, 5. *Open hills.* Bisamberg near Vienna.

542. APOCYNUM.

1. **venetum.** Stem spreading. L. oblongo-lanceolate, obtuse, mucronate, rough on edge. Fl. in a panicle. Cor. downy. **p.** 6–8. *Shore.* Ven. Trieste.

543. CYNANCHUM.

A. *Crown with 5 interior appendages.*

1. **monspeliacum.** Stem twisting, herbaceous. L. reniformi-cordate, acute, smooth, all broader than long. Div. of Cor. lanceolate. Stalk as long as L. **p.** *Coasts.* mdt. Fr. Rochelle.

2. **acutum.** Twisting. L. deeply cordate, acuminate; the lower longer than broad. Div. of Cor. oblongo-lanceolate. Stalk shorter than L. **p.** 6–9. *Shores.* Nice. Ven. Cal. Sic.—Bert.

These two species do not seem to me well described. The specimens I have from Montpellier have a triangular outline to the L., with a deep narrow sinus at the base, and sometimes a small point, but no proper acumen. Those from Sicily have a L. with a rounded outline, a much broader sinus at the base, and a large acumen.

B. *Crown without appendages.*

3. **Vincetoxicum.** Erect. Middle L. cordate, largely acuminate, ciliate. Cor. beardless. Segm. ovate. Lobes of Crown 5, not touching, but connected by a pellucid membrane. **p.** 7, 8. *Rocky hills.* Fr. G. It.

4. **laxum.** Stem nearly erect. Middle L. oblongo-lanceolate, on a cordate base, acuminate, ciliate? Cor. beardless. Segments oblong, with reflexed margin. Lobes of the Crown 5, not touching, but connected by a pellucid membrane. **p.** 7, 8. *Warm.* Carn. —Koch.

5. **contiguum.** Stem erect. Middle L. cordate, acuminate, ciliate. Cor. beardless. Lobes of the Crown 5, close together, not connected by a membrane. **p.** 5–7. *Meadows.* Trieste. Istr.—Koch.

6. **nigrum.** Stem twisting at top. L. ovate, acute, bearded at base. Rac. terminal. Cor. bearded. Crown acutely 10-cleft. Fl. *dark purple.* **p.** 5–9. *Barren hills.* mdt. Fr. Nice.

544. PERIPLOCA.

1. **græca.** Twisting. L. ovate or oblong, acuminate. Corymbs axillary, on long stalks. Cor. villous within. Anthers obtuse. **s.S.** 6, 7. *Woods.* Pisa. Otranto.

[illegible]

545. GOMPHOCARPUS.

✓ 1. **fruticosus.** L. opposite, lineari-lanceolate, smooth. L. and Fl.-stalks downy. Umbels on short stalks, nodding. **s.S.** 6, 7. Cors. and Sard.

546. ASCLEPIAS.

1. **Cornuti.** Stem simple. L. oval, flat, tomentose beneath. Stalks of the head or umbel extra-axillary. Follicles ovate, covered with soft spines. **p.** 6–8. *Escapes.* Romainville. Malesherbes.

547. STAPELIA.

1. **europæa.** Stems short, square, smooth. Fl. fasciculate. Fil. quite simple, with 2 glands. **s.S.** 7–11. Lopadusa.

LXV. GENTIANEÆ.

Corol 1 a regular, 4–8-cleft, inferior, marcescent. Æstivation convolute. Ovary of 2 carpels, the edges meeting or slightly inflexed.

548. MENYANTHES.

✓ 1. **trifoliata.** L. ternate, quite smooth, on long stalks. **p.** 4, 5. *Wet peaty.*

549. VILLARSIA.

✓ 1. **nymphæoides.** L. cordato-sobrotund, punctato-glandulose beneath, floating. Umbels axillary, sessile. Cor. fringed. **p.** 7. *Still water.*

550. CHLORA.

✓ 1. **perfoliata.** L. triangulari-ovate, united at the base in their whole width. Cal. divided to base. Div. linear, acute. Div. of Cor. obtuse. **a.** 7, 8. *Dry pastures.* (*Moist meadows,* Koch.)

✓ 2. **serotina.** L. cordato-elliptic, slightly connate. Cal. divided to base. Div. linear, acuminate or lanceolato-subulate. Div. of Cor. somewhat acute. **a.** 8–10. *Peaty meadows,* Rheinthal. *Sandy,* Nap.

β. *acuminata.* Div. of Cor. acuminate.

✓ 3. **sessilifolia.** L. ovato-lanceolate, slightly connate. Cal. divided about half way. Div. lanceolate. **a.** 6. *Shore.* Rochelle. mdt. Fr.

551. SWERTIA.

✓ 1. **perennis.** Cor. 5-partite. Stalks 4-edged, somewhat winged. Stem simple. Root-L. oval, (elliptic, Koch). **p.** 7, 8. *Peaty mountain meadows.* Alps. Pyr. Vosges. Riesengebirge.

552. LOMATOGONIUM.

1. **carinthiacum.** Mouth of Cor. bearded. Div. of Cal. lanceolate. L. ovate, acute. Root-L. obovate, obtuse. Fl.-stalks long, naked. **a.** 8–10. *Stony, and beds of torrents.* Salzb. Carin. s. Tyrol. ✓

553. GENTIANA.

A. Tube of Corolla short, or greatly enlarged at the mouth.
- **i.** Flowers in whorls or heads.
  - **a.** Corolla without accessory plaits. Sp. 1–5.
  - **b.** Corolla with accessory plaits.
    - * Calyx a sheath, divided on one side. Sp. 6–8.
    - ** Calyx campanulate. Teeth nearly equal. Sp. 9–11.
- **ii.** Flowers solitary or in pairs. Sp. 12–17.

B. Tube of Corolla cylindrical or somewhat barreled.
- **i.** Perennial. Stems simple, 1-flowered, with barren shoots. Sp. 18–24.
- **ii.** Stems branched; no barren shoots. Sp. 25–27.

C. Throat of Corolla bearded!
- **i.** Calyx tubular, with 4–5 Teeth. Sp. 28–31.
- **ii.** Calyx 4–5-partite. Sp. 32, 33.

D. Throat naked. Segments fringed! Sp. 34.

A. *Tube of Corolla very short or greatly enlarged at the mouth. Throat naked. Segments not fringed.*

i. *Flowers in whorls or heads.*

a. *Corolla without accessory plaits.*

1. **lutea.** Cal. a sheath deeply divided on one side. Cor. rotate, 5-partite. Div. lanceolate, acuminate, *yellow.* **p.** 7, 8. *Mountain meadows.* m. and s. Eur. ✓

The four following are supposed to be hybrids between this and other species.

2. **Thomasii.** Cal. a sheath deeply divided on one side. Cor. rotate, 5-partite, *purple, somewhat spotted.* Div. shortly acute. Anthers free. **p.** 7, 8. *High mountain pastures.* Bex. Glacier of Rhone.

3. **biloba.** Cal. with 2 equal lobes. Cor. campanulate, 6-cleft. Anthers free. **p.** *Mountains* of Seyne in Prov.

4. **Charpentieri.** Cal. with 2 short acuminate teeth. Cor. campanulate, 5-cleft, *with red spots.* There are sometimes 2 or 3 smaller additional Teeth to the Calyx. **p.** 7, 8. *Mountain valleys.* Upper Engadin.

5. **gaudiniana.** Cal. campanulate, with 2 or three teeth on one side and none on the other. Cor. campanulate, 6-cleft. Anthers united. **p.** 7, 8. *Mountains* above Bex.

b. *Corolla with accessory plaits.*

* *Calyx a Sheath deeply divided on one side.*

6. **Burseri.** Cor. campanulate, 6-cleft. Anthers separate (without a mucro, Bert.). L. ovato-lanceolate, obtuse. *Cor. yellow, usually with dark spots.* **p.** 6. c. and central Pyr.

7. **purpurea.** Cor. campanulate, 6-cleft. Segm. ovate, about one-third as long as tube. Anthers closely connected. *Fl. purple externally, yellowish within, with rows of green dots.* **p.** 7, 8. *Mountains.* s. Sw. n. Apenn.

8. **macrophylla.** "Cal. obtuse, entire, or somewhat erose at top. Cor. campanulate, 6-cleft. Segm. eroso-crenate. Anthers mucronate, at last detached. Lower L. elliptico-oblong, acute, 7-nerved; upper oblongo-lanceolate, acuminate. **p.** 8. *Stony woods.* Valderia, Pdm."—Bert.

** *Calyx campanulate, with nearly equal teeth.*

9. **pannonica.** Teeth of Cal. lanceolate, recurved. Cor. campanulate, 6–7-cleft. Div. somewhat blunt, one-third of tube. L. sessile, nerved. *Fl. purple, spotted. Tube pale yellow.* **p.** 8, 9. *High grass.* e. Alps.

10. **punctata.** Cor. campanulate, 6-fid. Div. oblong, one-fourth of tube. Teeth of Cal. lanceolate, erect. Lower L. stalked, elliptical. *Fl. pale yellow.* (The Teeth of Cal. are shorter, and the Cor. is less deeply divided, than in Sp. 9, Bert.) **p.** 7, 8. *High grassy.* Alps. Pyr. ✓

β. campanulata. Cor. without dots.

11. **cruciata.** Cor. tubuloso-campanulate, 4-cleft. L. decussate, oblongo-lanceolate, 3-nerved, sheathing at base. Lower Sheaths long, dilated upwards. **p.** 7–9. *Dry pastures.* m. and s. Eur. ✓

ii. *Flowers solitary or in pairs. Corolla with accessory plaits.*

12. **asclepiadea.** Cor. turbinato-campanulate, 5-cleft. L. largely acuminate, on an ovate base, 5-nerved, sessile. Fl. numerous, opposite and terminal. *Fl. nearly sessile, blue internally, with dark dots.* **p.** 8, 9. *Grassy thickets.* Alps. Vosges. Apenn. ✓

13. **Pneumonanthe.** Cor. clavato-campanulate, 5-cleft. L. lanceolate or linear, obtuse; the lower very small, and like scales. Sheaths very short. Anthers united. Stigmas long linear. *Fl. deep blue within, with 5 green dotted stripes.* **p.** 7–9. *Peaty meadows.* ✓

14. **Frœlichii.** Stem 1-flowered. Cor. clavato-campanulate. L. lanceolato-linear; lower crowded. Sheaths membranous, broader upwards. Anthers united. Stigmas oblong. Style half as long as germen. *Fl. pale blue, unspotted.* **p.** 8, 9. *Very high.* Carn.

15. **frigida.** Fl. 1 or 2. Cor. clavato-campanulate. L. lanceolato-linear; lower crowded. Sheaths membranous, broader upwards. Anthers separate. Style short (not one-fourth of germen). Stigma oblong. *Cor. whitish, with blue stripes and scattered dots.* **p.** 7, 8. *Very high granitic.* Alps of Seckau in Styria. ✓?

16. **acaulis.** Stem 1-flowered. Cor. clavato-campanulate. Teeth of Cal. attenuato-lanceolate, from a broad base, pressed on the tube of corolla. Root-L. in rosettes, elliptic. Anthers united. **p.** 7, 8. *Somewhat high meadows and pastures.* Pyr. Alps. Apenn. ✓

17. **excisa.** Stem 1-flowered. Cor. clavato-campanulate. Teeth of Cal. ovato-lanceolate, somewhat narrowed at base, spreading. ✓

Root-L. in rosettes, oval or elliptic. Anthers united. **p.** 7, 8. *High granitic meadows.* Sw. G.

β. alpina, Vill. Smaller in all its parts.

B. *Tube of Corolla cylindrical, or somewhat barreled. Throat naked. Segments not fringed.*

i. *Perennial. Stems numerous, simple, 1-flowered. Barren shoots prepared for following year.*

✓ 18. **bavarica.** L. obovate, very blunt, attenuate; the lower crowded. Style deeply cloven. **p.** 7, 8. *High moist.* Alps. Jura. Pyr. Apenn.

19. **brachyphylla.** L. subrotundo-ovate, acute, attenuate, somewhat fleshy. Root-L. in rosettes. Style undivided. **p.** 7, 8. *Very high granitic.* s. e. Alps.

✓ 20. **verna.** L. elliptic, acute. Root-L. in rosettes. Style undivided. Angles of Cal. evenly winged. *Fl. bright blue.* **p.** 5, 6. *High.* Alps. Jura. Pyren. Apenn. Teesdale. Galway.

✓ 21. **æstiva.** L. elliptico-lanceolate. Root-L. in rosettes. Style undivided. Wings of Cal. broadest in the middle. **p.** 6, 7. e. Alps. *Fl. twice as long as in* G. verna, *of which it is probably a variety.*

22. **imbricata.** L. lanceolato-elliptic, attenuate, rough on margin: all imbricate. Fl. funnel-shaped. Style undivided. **p.** 7, 8. *Very high.* Tyrol. Carn.

23. **pumila.** L. linear, hardly narrower at base; lower crowded. Cor. funnel-shaped, somewhat crenate. Style undivided. **p.** 7, 8. *Very high.* Sty. Carn.

✓ 24. **pyrenaica.** Plaits of expanded Cor. forming 10 divisions! Intermediate Div. smaller, crenate, obtuse. L. lanceolato-linear. Stem somewhat branched at the bottom. **p.** 7, 8. *High.* e. Pyr.

ii. *Annual. Stem single, branched, many-flowered. No barren shoots. Styles cloven.*

25. **prostrata.** Expanded Plaits of Cor. more than half as long as segments. L. obovate, obtuse. Style bipartite, revolute. *Fl. pale blue.* **a.** 7, 8. *Snow.* Salzb. Carinth.

✓ 26. **utriculosa.** Cal. inflated, with winged angles. Intermediate Plaits of Cor. not expanded. Style long, cloven. L. ovate or oblong. Root-L. in rosettes. **a.** 6–8. *Moist mountain meadows.* e. Bav. Alsace. Jura. Between Dürkheim and Mannheim on the Rhine. Alps. Apenn.

27. **nivalis.** Cal. cylindrical. Angles keeled. Plaits of Cor. not expanded. Style short. L. ovate or oblong. Root-L. rosulate. *Fl. bright blue.* **a.** 7, 8. *Snowy.* Alps. Pyr. Apenn. ✓

C. *Throat of Corolla bearded. Root-L. obovate, stalked.*

i. *Calyx tubular,* 4–5-*toothed.*

28. **campestris.** Cor. 4-cleft. Segm. of Cal. 4, very unequal; the 2 outer covering the inner. Stipe of Caps. very short. L. ovato-lanceolate, acute. **a.** 7, 8. *Open.* ✓

29. **germanica.** Cor. 5-cleft. Cal. with 5 nearly equal teeth. L. sessile, ovate, prolonged, acute. Stipe of Caps. very short. **a.** 8, 9. *Meadows and moist thickets.* G. Fr. ✓

β. uniflora, Willd. 1-flowered.

30. **Amarella.** Cor. 5-cleft. Cal. with 5 nearly equal teeth. Stipe about one-third as long as capsule. L. sessile, lanceolate, on a broad base, acute. **a.** 8, 9. *Meadows and pastures. Fl. much smaller than in Sp.* 29, *and L. much narrower.* ✓

31. **obtusifolia.** Cor. 5-cleft. Cal. with 5, lineari-lanceolate, nearly equal teeth. Stipe of Caps. very short. L. sessile, oblong, obtuse; uppermost ovato-lanceolate, acute.—Koch. **a.** 7, 8. *High mountains.* G. ✓

ii. *Calyx* 4–5-*partite. Stem branched only at base. Flower-stalks long, naked.*

32. **tenella.** Cor. 4-cleft, tubuloso-campanulate, salver-like. Div. of Cal. 4, ovato-lanceolate, equal. L. elliptico-oblong, somewhat acute. **a.** 8, 9. *Snowy.* s. Alps of Prov. Pyr. Mont Cenis. Splügen. ✓

33. **nana.** Cor. 4–5-cleft, tubuloso-campanulate. Div. of Cal. 4–5, ovate, nearly equal. L. obovate, very obtuse. **a.** 8, 9. *Snowy.* Highest Alps of Salzb. and Carinthia.

D. *Throat naked. Segments of Corolla fringed.*

34. **ciliata.** Fl. terminal, *blue.* Cor. 4-cleft. Stem flexuose. L. lineari-lanceolate. **a.** 8, 9. *Moist rough hills.* Fr. G. Sw. It. ✓

554. ERYTHRÆA.

1. **Centaurium.** Stem erect, nearly simple. Pan. dichotomous, fastigiate. Fl. in the forks, nearly sessile. Cal. half tube of opening flower. Lobes of Cor. oval, obtuse. L. ovali- ✓

oblong. Caps. almost 2-celled. **a.** 6–8. *Open woods and pastures.*

2. **latifolia.** Stem erect, simple, very short. Pan. crowded. Fl. of forks sessile. Cal. nearly as long as tube of opening flower. Lobes of Cor. lanceolate, somewhat obtuse. L. oval, 5–7-nerved. **a.** 6–8. *Coasts.* n. Eur.

3. **linariifolia** (*littoralis*, Sm.). Stem simple. Corymb dense. Fl. of forks sessile. Cal. as long as tube of opening corolla. Lobes of Cor. oval, obtuse. Caps. nearly 1-celled. Lower L. in rosettes, oblong. **a.** 6, 7. *Coasts.* Scotl. Liverpool. n. G.

4. **tenuifolia.** Stem branched. Div. of Cal. linear, somewhat obtuse, as long as tube of opening corolla. Div. of Cor. oval. All L. linear, 1-nerved: lower very long. **a.** 7, 8. *Sands* of the Durance, Fr.

5. **diffusa.** Diffuse, ascending, few-flowered. Fl. sessile. Cal. nearly as long as tube of opening corolla. Div. of Cor. as long as tube, elliptic. Lower L. elliptic, subrotund, approximate. **a.** *Among furze.* Morlaix.

6. **pulchella.** Stem much branched (simple in starved specimens). Fl. of forks stalked. Cal. nearly as long as tube. Segm. of Cor. lanceolate. L. ovate. Caps. 1-celled. **a.** 7–9. *Barren pastures.*

7. **spicata.** Stem quadrangular. Branches simple, each ending in a long spike! L. oblong, 5-nerved. Cal. Teeth unequal. Div. of Cor. lanceolate. **a.** 7, 8. *Sandy coasts.* s. Fr. Trieste. Italy.

8. **maritima.** Stem simple. Pan. corymbose, few-flowered. L. ovato-lanceolate. Div. of Cal. lineari-subulate. Lower L. ovate, upper oblongo-lanceolate. *Fl. yellow.* **a.** 6, sometimes 9. *Shores* of Mdt.

Not well known.

9. **Elodes.** "Stem erect, nearly simple, hirsute. L. round. Cymes 6–10-flowered, on axillary stalks. Cal. as long as tube of corolla. Lobes obtuse, connected into a tube. Cor. *yellow.* Lobes acute. **p.** *Boggy meadows.* Valle d'Ossam, lower Pyr."—Griseb.

555. CICENDIA.

1. **Candollei.** Stem branched, somewhat dichotomous, slender. L. lineari-lanceolate, 3-nerved. Fl.-stalks very long. *Fl. pink.* **a.** 6, 7. *Places sometimes under water.* Domfront. Anjou. Plelan. Nantes. Montp. Lungo Sardo in Sardinia.

2. **pusilla.** Stem much branched, dichotomous. L. oblongo-lanceolate, 3-nerved. Fl.-stalks short. Border of Cor. connivent, *rose-coloured, white, or yellow. Perhaps not different from Sp.* 1. **a.** 7, 8. *Places overflowed in winter.* Fontainebleau. Alençon. Aurillac.

3. **filiformis.** Stem slender, dichotomous. Root-L. lineari-lanceolate; upper subulate, 1-nerved. Fl.-stalks very long, naked. Cal. campanulate, with 4 teeth. Style undivided. *Fl. yellow.* **a.** 7. *Moist sandy or peaty, occ. throughout Europe.*

LXVI. POLEMONIACEÆ.

Corolla inferior. Æstivation imbricate. Stamens 5. Germen of 3 cells, with central placenta. Style 1. Stigma 3-cleft.

556. POLEMONIUM.

1. **cæruleum.** L. pinnate. Fl. erect. Cal. divided to middle. Segm. somewhat obtuse. **p.** 6. *Moist bushy.* Eng. Pyr. Jura. Ger. *occasionally.*

LXVII. CONVOLVULACEÆ.

Corolla inferior, regular, longitudinally plaited. Germen 4-celled, on an hypogynous disc.

557. CONVOLVULUS.

A. *Flowers sessile, with 2 opposite bracts close to flower. Capsule imperfectly 2-celled.*

1. **Soldanella.** Bracts broadly ovate. L. reniform. Stalks 1-flowered, 4-edged, winged. Stems procumbent. **p.** 6, 7. *Sandy shores.*

2. **sylvestris.** L. cordate: *basal lobes sometimes truncate.* Bracts concave, one embracing the other. Stem climbing. *Fl. white.*

p. 7–9. *Hedges and thickets.* Rome. K. Naples. Sicily.

✓ 3. **sepium.** L. sagittate: basal lobes truncate. Bracts flat, lying parallel to each other. *Fl. usually white.* **p.** 7–9. *Hedges and thickets.*

B. *No Bracts close to flower. Capsule 2-celled.*

i. *Stem twisting.*

✓ 4. **arvensis.** L. sagittate, acute. Basal Lobes acute. Stalks axillary, solitary, generally 1-flowered. Bracts very small. **p.** 6, 7. *Dry cult. Fl. pink, with yellowish plaits.*

✓ 5. **althæoides.** Hairs spreading. Lower L. cordate, somewhat lobed; upper pedatifid, unequally dentate. Fl.-stalks long, generally 2-flowered. **p.** 3–5. *Dry.* Istria. s. It. Sic. Sardinia. Corsica.

6. **tenuissimus.** Silky; hairs adpressed. Lower L. cordate, prolonged, obtusely dentate; upper pedatifid, with linear, nearly entire divisions. Stalks long, generally 2-flowered. **p.** 4–6. *Dry.* s. It. Sic.

ii. *Stems not twisting.*

a. *Perennial. Flower-stalks far exceeding L.*

✓ 7. **lanuginosus.** Somewhat shrubby, woolly. L. lineari-lanceolate, acute, sessile. Stalks supporting a compact head of flowers. Cal. acuminate. Stigma linear. **w.** 5, 6. *Rocks.* Perpignan. Toulon.

✓ 8. **Cantabrica.** Hairs spreading. L. lanceolate; lower attenuate and obtuse. Fl. 1–6, lax, on a long, axillary stalk. Caps. imperfectly 2-celled. Seeds 4. (According to Duby and to Choisy, the Sep. are linear: I find them elliptic or lanceolate, acuminate.) **p.** 6–9. *Rocky.* s. Eur.

9. **sabatius.** Downy. Stems procumbent. L. ovate or oval. Bracts linear. Stalks axillary, solitary, generally 2-flowered, exceeding L. Divisions of Cal. ovate, acute, spreading at top. Caps. 2-celled. **a.** 7, 8. Capo di Noli.—Bert.

b. *Annual. Lower Flower-stalks exceeding L.; upper shorter than L.*

10. **tricolor.** Somewhat hirsute. Lower L. obovato-lanceolate; upper lanceolate, sessile. Stalks axillary, 1-flowered. Sep. hirsute, narrow lanceolate, acuminate, with long cilia. **a.** 3–5. *Clayey fields.* Agrigentum.

11. **meonanthus.** Stem villous. L. lanceolate; upper sessile, acute. Stalks 1-flowered. Bracts linear, acuminate. Sep. ovato-lanceolate, acute. **a.** 5. *Shore.* Corneto.

12. **pseudo-tricolor.** Lower L. obovate; upper oblongo-lanceolate, obtuse. Stalks 1-flowered. Bracts lineari-filiform. Sep. ovato-oblong, obtuse, mucronulate. **a.** 4, 5. *Hills of St. Bartholomew at Genoa. Choisy, in DC., considers this and Sp.* 10, 11, *as one species.*

c. *Annual. Flower-stalks not exceeding L.*

13. **evolvuloides.** L. oblongo-spatulate, somewhat hairy, ciliate; upper amplexicaul. Fl. nearly sessile, axillary, solitary (crowded, Choisy); uppermost approximate. Caps. villous. **a.** 5, 6. *Clayey fields.* Caltanesetta and Delia, Sic.

14. **pentapetaloides.** Lower L. obversely lanceolate, stalked; upper lanceolate, sessile. Stalks axillary, solitary, 1-flowered. Fr.-stalks recurved. Cor. semiquinquefid. Stem decumbent. **a.** 4, 5. *Fields.* Sic. Sard. w. Lig.—Bert.

15. **siculus.** Downy, procumbent. L. cordate, acute. Stalks axillary, solitary, 1-flowered, falling short of L. Cal. hirsute. **a.** 4, 5. Sic. Sard. ✓

d. *Perennial. Flower-stalks not exceeding L.*

16. **lineatus.** Rhizoma creeping. Plant silky. Stems ascending. L. narrow lanceolate, lined: lower attenuate, obtuse; upper sessile. Fl.-stalks axillary, solitary, generally 2-flowered; upper approximate. Segm. of Cal. concave, connivent below, spreading above. Caps. obscurely 2–3-celled. Seeds 3 or 4. (**w.** Choisy.) **p.** 4, 5. *Maritime rocks.* Prov. Capri. Sic.—Bert. ✓

17. **Cneorum.** Shrubby, erect, silky. L. numerous, lanceolate, attenuate, sometimes obtuse. Fl. in a terminal corymbose head. **s.S.** 4, 5. *Calc. rocks.* Capri. Monte Pellegrino.

18. **Imperati.** Root creeping. Stem prostrate. Lower L. fiddle-shaped; upper 3- or 5-lobed. Stalks generally solitary, axillary, 1-flowered, thickened above the small, opposite, lanceolate bract. Seeds 2, villous. **p.** 7–9. *Shore.* Pozzuoli. Ischia.—Bert.

558. IPOMÆA.

1. **sagittata.** Smooth. Stem twining. Lower L. cordato-subrotund; upper sagittate, acuminate, with long, acute basal lobes. Stalks axillary, solitary, generally 2-flowered. Fil. villous at base. Seeds tomentose. **p.** 5–8. *Shore.* Mondello in Sic.

559. CRESSA.

1. **cretica.** Stem herbaceous, pubescent, not milky. L. entire, adpressed. Fl. crowded. **a.** *Moist shores.* mdt. Fr.

560. CUSCUTA.

A. *Stigma filiform. Flowers sessile,* Koch.

1. **densiflora.** Stem quite simple. Tube of Cor. globose, twice as long as border. Scales adpressed. **a.** 7, 8. *On flax.* Eng. G.

2. **europæa.** Branched. Tube of Cor. cylindrical, as long as segments. Scales adpressed, bipartite, *not easily seen.* **a.** 7, 8. *Parasitic on herbs and willows.*

3. **Epithymum.** Branched. Tube of Cor. cylindrical, as long as acute segments, much longer than calyx. Scales palmate, converging, and closing the tube. **a.** 7, 8. *Parasitic on heath, furze, &c.*

4. **Trifolii.** Branched. Tube of Cor. as long as segments, hardly exceeding calyx. Scales palmate, converging, closing the tube. 7, 8. *On Trifolium.* Eng.—Bab.

5. **planiflora.** Branched. Tube of Cor. campanulate, half as long as segments. **a.** 7. *On Colutea arborea,* near Botzen; *on Asperula cynanchica,* Monte Velino; *on Carlina gummifera,* Bocca di Falco, Sic.

B. *Stigma capitate.*

6. **alba.** Branched. Tube of Cor. cylindrical. Segm. of this and of Cal. obtuse. Scales crest-like. Styles 2. Fl. sessile, in sessile heads. **a.** 5, 6. *Parasitic on Umbellates, Galium, Plantago, Zizyphus, &c.* Sicily.

7. **corymbosa.** "Stem thread-like. Fl. corymboso-panicled. Corymb many-flowered. Pedicels fleshy. Cal. 5-partite. Segm. obtuse. Cor. campanulate, twice as long as calyx. Teeth somewhat acute. **a.** *Parasitic on Medicago: brought with seeds from America.*"—Choisy *in* DC.

8. **hassiaca.** "Stem branched. Fl. in bundles, stalked. Tube of Cor. campanulate, as long as border, closed with converging scales. Segm. spreading, with a horny, inflexed tip. Styles 2. **a.** 8, 9. *Parasitic on Compositæ, Medicago, and other plants.* Hesse. Nassau."—Koch. *I have inserted both these descriptions, not knowing whether they refer to the same or to different species.*

9. **monogyna.** Branched. Fl. in spikes (heads or racemes, Choisy), bracteate, at last stalked. Tube of Cor. cylindrical, twice as long as border. Scales adpressed. Only 1 Style! **a.** 7, 8. *Chiefly on willows,* Silesia. *On vines,* lower Lang.

LXVIII. BORRAGINEÆ.

Corolla inferior, of 1 petal. Germens 2 or 4. Style 1. Seeds in all 4.

561. CERINTHE.

1. **major.** L. with callous dots, setoso-ciliate. Teeth of Cor. very short, acute, reflexed. *Fil. shorter than anthers.* **a.** 5. *Woody hills.* s. Eur.

   β. *aspera.* Fil. as long as anthers. L. more bristly, and with more callous points.

2. **alpina.** L. without bristles. Callous Dots small. Anthers four times as long as filaments. Teeth of Cor. somewhat longer than broad, recurved at top. Segm. of Cal. unequal: the larger ovate; the smaller oblong. **p.** 6, 7. Alps.

   β. *tenuiflora,* Bert. Cal. much elongated in the fruit.

3. **longiflora.** L. smooth above. Segm. of Cal. all equal, linear, obtuse. Cor. deeply 5-toothed. Teeth acute. Style extending to twice the length of calyx. Isl. of Tavolara. —Viv.

4. **minor.** L. not ciliate (excepting sometimes the upper floral L.). Segm. of Cal. unequal. Teeth of Cor. erect, more than twice as long as broad. **b.** 5–7, Koch. 6–10, Bert. *Fields and borders.* e. G. n. c. It.

   β. *maculata,* Bert. Segm. of Cal. very unequal. Auricles of L. often overlapping.

   γ. *auriculata,* Bert. Stalks shorter than calyx. Auricles of L. divergent.

Bertoloni considers as species all the varieties I have enumerated in this genus.

562. HELIOTROPIUM.

✓ 1. **supinum.** Nut flat on one side, acute, usually solitary. Cal. closing on fruit, and falling off with it. Spikes usually solitary. Stem procumbent. L. oval. **a.** 6–8. *Sandy fields.* Catania. Lentini in Sic. Sard.

✓ 2. **europæum.** Nuts 4, subrotund. Cal. of Fr. spreading. Segm. of Cor. acute. L. ovate, entire, lineate. **a.** 7–9. *Fields.* m. and s. Fr. s. G. It.

3. **Bocconi.** Nuts 4, subrotund, hairless. Cal. of Fr. spreading. Segm. of Cor. rounded. L. ovate, entire, lineate. **a.** 7–9. Base of Ætna.

563. ASPERUGO.

✓ 1. **procumbens.** Fl. axillary. Cal. of Fr. expanded, flat. **a.** 4–6. *Rich uncult.* Eng. *rare.* Fr. G. It.

564. CYNOGLOSSUM.

[Divisions from Bertoloni.]

A. *Seeds convex on face.*

1. **clandestinum.** No prominent margin to seeds. Prickles nearly equal, and equally disposed. L. soft, hoary. Raceme covered with brown silk. Div. of Cal. oblong, obtuse; those of Cor. bearded. **b.** 4, 5. *Barren.* Cal. s. Sic. s. Sard.

✓ 2. **pictum.** No prominent margin to seeds. Prickles nearly equal, and equally disposed. L. soft, hoary: lower obtuse; upper acute. Cor. reticulate with purple veins. Div. not bearded. **b.** 5–7. *Uncult.* s. Fr. adr. G. It.

✓ 3. **montanum.** No prominent margin to seeds. Prickles nearly equal, and equally disposed. L. shining, and nearly smooth above. Middle L. contracted above the cordate base. Cor. not reticulate or bearded. **b.** 6. *Shade, occasionally.*

✓ 4. **officinale.** Prickles on the somewhat prominent margin of seeds, smaller and more crowded than on disc. L. broadly lanceolate, soft, hoary; upper cordate at base. **b.** 6, 7. *Uncult.*

β. *nebrodensis.* Div. of Cal. somewhat acute.

B. *Seeds concave on face. (Bertoloni says "back," but the descriptions imply that he means the outward part.)*

5. **apenninum.** Seeds not membranous on margin, everywhere covered with small prickles. L. soft, hoary. Stems hollow. Stamens exsert. **b.** 5, 6. Montigno. Monte Como.

6. **magellense.** Seeds not membranous on margin, covered with short prickles, concave. Face nearly smooth. L. woolly, narrow lanceolate. Rac. "congloblate:" a bract to every pedicel. **b.** 4–7. *Mountains.* Umbr. Abruzzi.

✓ 7. **cheirifolium.** Seeds not membranous on margin, less prickly on concave face. Pubescence silvery. L. lanceolate. One or two Bracts to each raceme, but not to every flower. **b.** 3, 4. *Rough.* s. Fr. Sic.

β. *calcaratum.* 1–5 small Spurs at base of tube of corolla. Nismes.

8. **Columnæ.** Margin of seeds membranous, eristato-dentate; concave face nearly smooth. Stem villous. L. pubescent. **b.** 3, 4. *Calc. thickets.* Pal. Nebrodes.

Not well known.

9. **siculum.** "Softly and finely villous. L. stalked, lanceolate; upper sessile, lineari-lanceolate. Div. of Cal. lineari-oblong, obtuse, as long as corolla. **b.** 3, 4. *Open fields.* Palermo, al Caputa."—Guss.

10. **tomentosum.** Lower L. oblongo-lanceolate, somewhat obtuse; upper lanceolate, semiamplexicaul, covered with a golden tomentum. Rac. terminal, many-flowered, without bracts. Nuts adpressed, with short glochidiate prickles. **p.** *Open hills.* Italy? Palermo? —DC.

565. OMPHALODES.

1. **littoralis.** Seed with a long attachment to style, and an inflexed, dentato-ciliate margin. Root-L. spatulate. Stem-L. sessile, ovate; uppermost papillose. Margin strigoso-ciliate. Rac. bracteate, few-flowered. **a.** 5–7. *Sandy shores.* w. Fr.—DC.

✓ 2. **linifolia.** Seed with long attachment to style, and an inflexed, dentate margin. Root-L. cuneiform. Stem-L. lineari-lanceolate, strigoso-ciliate. Rac. nearly without bracts. Cor. twice as long as calyx. **a.** 3–7. *Stony hills.* mdt. Fr.

✓ 3. **scorpioides.** Seed attached by a point, downy. Margin nearly entire. Stem prostrate. Root-L. spatulate. Stem-L. lanceolate, sessile; lower opposite. Fl.-stalks axillary, solitary, at last exceeding L. **a.** 4, 5. *Moist shade.* e. G.

4. **verna.** Seed attached by a point. L.

stalked. Root-L. cordate. Upper stem-L. ovato-lanceolate. Rac. in pairs, few-flowered. **p.** 4, 5. *Shade.* Salzb. l. Sty. Carn. Pdm.

566. ECHINOSPERMUM.

1. **Lappula.** Cal. of Fr. erect. Div. stellate. Margin of Seeds with a double row of glochidiate prickles. **a.** 5, 6. It.

2. **deflexum.** Fr.-stalks recurved. Margin of seeds with a simple series of glochidiate prickes united at base. **a. b.** 7, 8. *Stony mountain woods.* e. G. Vall. Cimone di Fanomo. Modena.

567. MYOSOTIS.

A. *Hairs of Calyx straight, adpressed.*

i. *Calyx of Fruit shorter than stalks.*

1. **palustris.** Cal. of Fr. open. Stalks divergent. Teeth not half as long as tube. Border of Cor. flat, longer than tube. Style about as long as calyx. **p.** 6–8. *Water.*

2. **repens.** Cal. of Fr. open. Stalks divergent. Segm. acute, as long as tube. Border of Cor. flat, longer than tube. Hairs of Stem spreading. **p.** 6–8. *Wet peaty.* Br. G.

3. **cæspitosa.** Cal. of Fr. open. Stalks divergent. Segm. obtuse, as long as tube. Border of Cor. concave, as long as tube. Hairs of Stem (if any) adpressed. **p.** or **b.** 6–8. *Wet.* Br. Bel. G.

4. **micrantha.** "Stem rooting at base. L. lanceolato-lingulate, obtuse, 3-nerved. Cal. semiquinquefid, obtuse, with adpressed bristles in fruit, gaping, top-shaped, about equal to the somewhat deflexed stalks. Tube of Cor. longer than concave border. **a.** 4, 5. *Pools.* Sic."—Bert.

5. **incrassata.** Cal. of Fr. as short or shorter than club-shaped! stalks. Segm. equalling tube, connivent, somewhat acute. Cor. hardly exceeding calyx. **a.** 4, 5. *Plashes.* Sicily.

ii. *Calyx of Fruit as long as, or longer than stalks.*

6. **multiflora.** Cal. of Fr. as long as spreading stalks, half open. Segm. obtuse, as long as tube. Cor. short. **a.** *Sandy.* central France.

7. **pusilla.** Cal. of Fr. campanulate, longer than spreading stalks. Segm. longer than tube. Border of Cor. much shorter than tube. Root-L. on long stalks. Lower Fl. bracteate. **a.** 4, 5. *Dry.* Sard. Cors. Mars.

B. *Hairs of Calyx spreading; those of base hooked.*

i. *Plant perennial or biennial, or at least remaining and flowering for a long time.*

8. **alpestris.** Cal. of Fr. shorter than ascending stalk, narrowed at base. Teeth longer than tube, spreading. Border of Cor. flat, longer than tube. Root-L. on long, narrow stalks. **p.** 7, 8. *Mountains.*

9. **sylvatica.** Cal. of Fr. shorter than spreading stalks, rounded at base. Teeth longer than tube, connivent. Border of Cor. flat, longer than tube. Root-L. on short, broad stalks. **b.** or **p.** 6, 7. *Woods.*

10. **arvensis.** Cal. of Fr. shorter than divergent stalks. Teeth equal to tube. Border of Cor. concave, equalling tube. **a.** or **b.** 6–9. *Fields and uncult.*

11. **variabilis.** Cal. of Fr. closed, as long as stalk. Segm. longer than tube. Tube of Cor. at last twice as long as calyx. Anthers exsert! **b.** 6? *Woods.* Rottenmanner Tauern. Styria.

ii. *Plant annual, flowering and quickly disappearing.*

12. **collina.** Cal. of Fr. campanulate, as long as divergent stalks. Div. equalling tube. Border of Cor. concave, shorter than tube. **a.** 3–5. *Sandy banks.*

13. **versicolor.** Cal of Fr. closed, longer than spreading stalks. Div. longer than tube. Border of Cor. shorter than exsert tube. Rac. quite separate from L. **a.** 5, 6. *Sandy. The Fl. open when yet turned downwards, and are at first quite yellow.*

14. **stricta.** Cal. of Fr. closed, as long as stalk. Div. longer than tube. Tube of Cor. included in calyx. Rac. leafy at the base. **a.** 4, 5. *Sandy uncult.* G.

15. **sparsiflora.** Cal. of Fr. closed, deeply divided. Lower Stalks bent down, many times longer than calyx. Rac. few-flowered, leafy at base. **a.** 5, 6. *Woods and moist thickets.* Germany.

568. ERITRICHUM.

1. **nanum.** Margin of Fr. fringed with small prickles. Hairs of Cal. spreading, straight. **p.** 7, 8. *Very high granitic.* s. Alps.

β. Hacquetii, Koch, ed. 1. Margin of Fr.

unarmed, or only with 2 or 4 teeth. Sty. Carn. Tyrol.

569. LITHOSPERMUM.

A. *Seeds tubercled. Tube of Corolla with longitudinal plaits.*

i. *Annual.*

✓ 1. **arvensis.** Fr. on short, terete pedicels; lower wide apart. Cal. about as long as corolla. *Fl. white.* L. lanceolate; lower obtuse. **a.** 5, 6. *Fields.*

2. **Splitgerberi.** "Small. Stems herbaceous, erect, branched at base. L. strigose. Root-L. wider, obovato-spatulate. Stem-L. narrowly lineari-lanceolate. Pedicels terete, very short. Segm. of Cal. a little shorter than corolla, somewhat spreading when in fruit. Nuts warty, not wrinkled. **a.** *Dry hills.* Sic."—DC.

3. **minimum.** Small. Hairs adpressed. Lower L. spatulate; upper lanceolato-linear. Tube of Cor. much exceeding segments of calyx. Nuts reticulato-muricate, compressed at top, obtuse. **a.** 3, 4. *Dry coasts.* St. Elia in Sard.—Bert.

4. **incrassatum.** Small, hirsute. Lower L. spatulate; upper lanceolato-linear. Pedicel of Fr. as wide at top as calyx. Cor. hardly exceeding calyx. Seeds pitted and finely grained. **a.** 5, 6. *Open pastures.* Luc. Cal. Nebr.

✓ 5. **apulum.** Erect, hirsute, with spreading hairs. Fr. in spikes, approximate. Segm. of Cal. acuminate, always erect, nearly equalling corolla. L. linear; lower somewhat spatulate. **a.** 3–5. *Dry fields and pastures.* s. Fr. It. Istria.

ii. *Perennial. Corolla downy at mouth, twice as long as calyx.*

✓ 6. **tinctorium.** Hirsute. Tube of Cor. as long as calyx. Stems procumbent. L. lanceolate: the lower stalked; upper and Bracts cordate. Seeds incurved, muricate. **p.** 2–4. Lig. Cal. Sic. Alkanna tinctoria *of DC.; but not, according to Bertoloni,* Lithospermum tinctorium *of the* 1*st ed. Sp. Pl.*

7. **Lehmani.** "Tufted, perennial or woody at base, calloso-strigose, hoary. Stems of the year diffuse, ascending. Lower L. oblongo-linear, somewhat blunt; upper sessile. Bracts somewhat cordate, exceeding calyx. Rac. secund. Tube of Cor. exceeding calyx. Seeds lacunoso-rugose. **w.** or **p.** *Dry calc. hills.* w. Sic."—Guss.

B. *Seeds smooth. Throat of Corolla somewhat contracted. Perennial.*

8. **purpuro-cæruleum.** Throat of Cor. with downy longitudinal plaits. Barren Stems prostrate; fertile erect, divided at top. L. lanceolate, acuminate. Cor. twice as long as calyx. **p.** 5, 6. *Woody hills. occ.* ✓

9. **officinale.** Throat of Cor. with downy transverse protuberances. Stem erect, much branched. L. lanceolate, acute, 3-nerved. **p.** 5, 6. *Bushy.* ✓

C. *Seeds smooth. Throat of Corolla smooth and open.*

10. **graminifolium.** Cor. smooth externally, two or three times as long as calyx. Stems woody at base. L. linear, rough: margin revolute. Rac. many-flowered, cymose, nodding. **w.** 6, 7. *Calc. rocks.* it. Tyrol. Apenn. Mountains of Carrara.

11. **fruticosum.** A Shrub. Cor. somewhat hairy externally, about twice as long as calyx. L. strigose on both sides, lineari-lanceolate; upper somewhat ovate at base. Rac. few-flowered. **s.S.** 5, 6. mdt. Fr. ✓

12. **rosmarinifolium.** A Shrub. Cor. silky externally, two or three times as long as calyx. L. lineari-lanceolate, not at all ovate at base, margin revolute; under side hoary with parallel, adpressed hairs. **s.S.** 12–3. *Calc. rocks.* Capri. Sic.

13. **prostratum.** A prostrate Shrub. Cor. two or three times as long as calyx. Tube densely villous at top. L. lineari-lanceolate: margin somewhat revolute. Rac. terminal, short, few-flowered. **s.S.** 5, 6. *Heaths.* Brit. Dax. Bayonne. ✓

14. **oleifolium.** An ascending Shrub. Cor. twice as long as calyx. Tube villous. L. elliptico-oblong, silky and silvery beneath. Rac. terminal, leafy, few-flowered. **s.S.** 5, 6. *Rocks.* Prats de Mollo. ✓

15. **calabrum.** Shrubby at base, procumbent. Cor. hairy externally, shorter than calyx. L. oblongo-elliptic, acute, hairy. **w.** 6. *Rocks.* Corigliano in Calab.

Not well known.

16. **Gastoni,** Alph. DC. A plant with the habit of *L. purpuro-cæruleum,* but with ovate or ovato-lanceolate L. and wrinkled Seeds. **p.** *Fissures of rocks* above Eaux-bonnes, e. Pyr.

570. STEINHAMMERA.

1. **maritima.** Stem branched, procumbent. L. ovate, acute, fleshy, sprinkled with callous dots. Fr. smooth. Rac. leafy. **p.** 7, 8. *Sand; northern shores. Not in G.*

571. PULMONARIA.

1. **officinalis.** Outer L. of heads of the barren shoots cordate, on long stalks winged at the top. Upper L. elliptic. Upper part of Stem with bristle-like, and jointed, glanduliferous hairs. **p.** 3, 4. *Shade.* G. Fr. It.

2. **saccharata.** Outer L. of heads of barren shoots ovate, suddenly contracted into a narrowly winged stalk; inner oblong, decurrent on stalk. Stem with bristle-like, and jointed, glanduliferous hairs. *L. blotched.* **p.** 3, 4. *Moist shade.* Spa. Pom. Sty.—Koch.

3. **mollis.** "Root-L. lanceolate or elliptico-lanceolate, decurrent on a broadly winged stalk. Stem with soft, jointed, glandular hairs. **p.** 4, 5. *Stony shade.* Vorberg in Bav. Aust. Schweinfurt. Wurtzburg."—Koch.

4. **angustifolia.** "Root-L. lanceolate or elliptico-lanceolate, decurrent on a winged stalk. Stem with bristle-like hairs, mixed with a few glanduliferous. Throat internally hairy below the bearded circle. **p.** 4, 5. *Shade.* I. of Wight. G. Fr. It."—Koch.

5. **azurea.** Root-L. elliptico-lanceolate and lanceolate, decurrent on a winged stalk. Stem with bristle-like hairs. Throat of Cor. internally smooth below the bearded circle. **p.** 4, 5. *Shade.* G. *occ.*

572. ECHIUM.

A. *Shrubby.*

1. **ambiguum.** "Hispid. L. lanceolate. Rac. compound, spreading. Branches forked. Cal. about as long as corolla. **s.S.** Catania." —Bert. *According to DC., a var. of* E. strictum, *of which, however, the Cor. is twice as long as the calyx.*

B. *Herbaceous. Flowers in lateral spikes.*

i. *L. lineari-lanceolate.*

2. **vulgare.** Tubercled, bristly. Stem straight, nearly simple. L. entire, 1-nerved. Spikes undivided. Tube of Cor. shorter than calyx. Style bifid. Stamens divaricate, declining, and resting on corolla. *It varies much in the comparative length of Cal., Cor., and Stamens.* **b.** 4–7. *Dry uncult.*

3. **pustulatum.** Tubercled, bristly. Stem straight, nearly simple. Spikes undivided. Tube of Cor. longer than calyx. Style bifid. Stamens parallel, declined, but remote from border of Cor., exceeding Cor. **b.** 5–7. *Uncult.* Istria. s. It. Sic.—Koch.

4. **Sibthorpii.** Tubercled and with spreading hairs. L. narrow lanceolate, ciliate. Cor. narrowly funnel-shaped, very irregular, four times calyx. Stamens as long as corolla. Seeds prickly. **b.** 6. Classis near Ravenna.—Bert. *DC. identifies this with* E. elegans, *which has velvety L. and a corolla about three times as long as the calyx.*

5. **rubrum.** Bristly. Stem straight, simple. Spikes undivided. Tube of Cor. twice as long as calyx. Style undivided. Stamens exceeding corolla. **b.** 6. *Meadows and openings in woods.* lower Aust. Mor.—Koch.

6. **italicum.** Bristly and warty. Stem straight, nearly simple. Rac. crowded, nearly cylindrical. Spikes bifid. Style bifid. Stamens as long as the nearly regular corolla. **b.** 6, 7. *Dry uncult.* Istria. It. s. Fr.

7. **pyrenaicum.** Stem warty, very hairy. Branches numerous, spreading, forming a broadly pyramidal panicle. Cor. nearly regular, somewhat exceeding calyx. Stamens exceeding corolla. **b.** ? 5–7. *Dry.* s. and s. w. Fr.

ii. *Upper L. ovate or cordate at base, somewhat amplexicaul.*

8. **violaceum.** Stem much branched. Lower L. oblongo-lanceolate, obtuse; upper acute. Spikes long, simple. **a.** 5, 6. Jersey. s. France.

9. **creticum.** "Stem diffuse or suberect, branched at base, hispid and tubercled. L. oval or oblongo-lanceolate, with scattered hairs. Stem-L. sessile. Spikes simple. Lower Fl. remote. Bracts lanceolate, ovate at base, acuminate, somewhat exceeding the very hispid calyx. Cor. twice as long as calyx, equalling stamens. **a.** 7. Beaucaire."—DC. Elne.

10. **plantagineum.** "Hirsute. Stem nearly simple. L. veiny beneath. Root-L. ovate, stalked. Stem-L. cordato-lanceolate; uppermost acute. Stamens equalling corolla. **b.** 4–7. *Fields and uncult.* Narb. It."—Bert.

11. **maritimum.** "Hispid. Hairs adpressed. Stem nearly simple. L. obversely lanceolate, spatulate. Stamens as long as the externally hirsute corolla. **b.** 4, 5. *Shores.* Sic. Sard. Cors."—Bert.

C. *Flowers in terminal spikes or racemes (or they might be said to be axillary, solitary; upper approximate).*

+ 12. **arenarium.** "Hispid with spreading hairs. Stem decumbent. L. obversely lanceolato-linear, acute. Cor. tubular, hardly exceeding calyx, hairy externally. The largest Lobes of border somewhat denticulate. Stamens included. Fr. tubercled. **b.** 3, 4. *Shores.* Reggio. Sic."—Bert.

✓ 13. **calycinum.** Decumbent, hispid with spreading hairs. L. oblongo-obovate. Cal. of Fr. enlarged, leafy, campanulate. Cor. small, tubular. Stamens included. **a.** 3–5. *Coasts.* Mars. It. Sic.—Bert.

573. ONOSMA.

Lobes of Calyx distinct, and Anthers included, in the European species.

✓ 1. **echioides.** Bristles each on a smooth tubercle. Stem much branched. L. lineari-lanceolate; upper ovato-lanceolate. Fil. half as long as smooth anther. **b.** 6, 7. *Rocky hills.* s. G. Vall. s. Fr.

✓ 2. **arenarium.** Bristles each on a smooth tubercle. Stem branched. L. lineari-lanceolate; upper ovato-lanceolate. Fil. shorter than the denticulato-scabrous anther. **b.** 6, 7. *Dry sandy woods.* Maintz.

✓ 3. **stellulatum.** Bristles each on a hairy, stellate tubercle. Stems simple. L. lineari-lanceolate, flat; upper lanceolate, from an ovate base. Cor. club-shaped. Fil. longer than anthers. **p.** 6, 7. *Open rocky.* s. Sw. s. Tyr. Trieste. It.

4. **montanum.** Bristles each on a hairy, stellate tubercle. L. lineari-oblong, margin revolute; upper hardly dilated at base. Fl. erect. Cor. nearly cylindrical. Anthers longer than filaments. **p.** 5, 6. *Rough open.* Vallais. Aquileïa. Italy.

574. NONNEA.

1. **lutea.** Seeds oblong, marked with longitudinal nerves; margin of hollow thin, without wrinkles. Lobes of Cal. acuminate, as long as tube of corolla. **a.** 5, 6. Cors.

✓ 2. **nigricans.** Seeds subglobose: margin of hollow thick and wrinkled. Stems decumbent. Cal. somewhat exceeding corolla, at last inflated. **a.** 3, 4. *Dry hills.* Sic. *This is* Lycopsis pulla *of Bert.*

3. **pulla.** Seeds subglobose, strongly wrinkled. Stems erect. Cal. of Fr. inflated. ✓ Cor. *dark purplish brown,* exceeding calyx. **p.** or **b.** 5, 6. *Fields and uncult.* e. G.

575. SYMPHYTUM.

1. **officinale.** Root tapering, branched. Stem branched. L. ovato-lanceolate, decurrent. ✓ *Fl. yellowish white.* **p.** 5, 6. *Moist meadows and banks.*

β. *patens.* Fl. purple. Cal. somewhat more spreading. ✓

2. **bulbosum.** Rhizoma slender, thickening into tubers. L. ovato-oblong, semidecurrent. Valves of Cor. exsert. **p.** 4, 5. *Vineyards.* Heidelberg. Rome.

3. **tuberosum.** Rhizoma thick and knobby. Stem nearly simple. L. ovate, slightly ✓ decurrent. Valves of Cor. included. **p.** 4, 5. *Moist meadows and woods. occ.*

4. **mediterraneum.** Lower L. ovate, on haft dilated at base and amplexicaul; upper elliptico-lanceolate, somewhat decurrent. Teeth of Cor. about one-fourth as long as tube. Valves included. Anthers awned at base. **p.** 3, 4. *Shade.* Toulon. Sic.

576. ANCHUSA.

A. *Calyx divided about to middle.*

1. **officinalis.** L. flat, lanceolate, entire. Bracts ovato-lanceolate. Div. of Cal. somewhat ✓ acute. Hairs of Pan. and Cal. spreading. Processes of Cor. ovate, velvety. Nuts acute. **p.** or **b.** 5, 6. *Stony uncult.* G. It.

β. *angustifolia.* L. and Bracts narrower. ✓

2. **leptophylla.** L. flat, lanceolate. Bracts ovato-lanceolate. Div. of Cal. very obtuse. Hairs of Pan. and Cal. accumbent. Processes of Cor. ovate, velvety. Nuts acute? **b.** 7, 8. *Uncult.* Fr.? Tyrol. s. Sw.

3. **undulata.** Strigose. Stem single. L. lanceolate, repando-dentate, undulate. Rac. in ✓ pairs. Stalks shorter than the lanceolate bracts. Tube of Cor. longer than border. *Style twice calyx of fruit.* Nuts obtuse. **p.** 5–7. *Fields.* Montp. It.

β. *hybrida.* Style not exceeding calyx of fruit.

4. **crispa.** "Hispid. Stems several, nearly erect (decumbent, Bert.). L. lineari-oblong, dentate, undulate. Rac. lax, few-flowered.

Stalks about as long as calyx. Cal. nearly equal to tube of corolla. Processes of Cor. ciliate. Nuts wrinkled and minutely granulate. **b.** 4. *Hills.* Cors."—DC. *This is a* Lycopsis, *according to Bert.*

5. **Capellii.** "Strigose. Hairs very unequal. Stems several, decumbent. L. lanceolate, slightly denticulate. Root-L. undulate, very attenuate. Bracts ovate, semiamplexicaul, acuminate. Rac. lax. Cal. of Fr. inflated, nodding. Tube of Cor. equal to its border and to the calyx. Processes downy. Nuts (ovoid, obtuse, Bert.) wrinkled. **a.** 5, 6. *Central meadows* of Sard."—DC.

B. *Calyx divided nearly to the base.*

6. **aggregata.** Stem decumbent. L. lanceolato-linear or lanceolate, obtuse, entire. Rac. short, very dense. Lower Bracts much exceeding flowers; upper about one-fourth of flowers. Tube of Cor. exceeding calyx. Cal. of Fr. spreading. Nuts boat-shaped, dentate on margin, somewhat bivalve when ripe. **a.** 5, 6. *Sandy shores.* Agrigentum.

✓ 7. **italica.** L. lanceolate or ovato-lanceolate, entire. Rac. panicled. Lobes of Cal. acute, shorter than tube of corolla, spreading when in fruit. Processes covered with brushes of hair. Nuts oblong, wrinkled, granulate. **p.** 5, 6. *Fields.* Fr. Trieste. It.

8. **Barrelieri.** Stem simple, ascending or erect (softly hispid, DC.). L. lanceolate or oblongo-lanceolate, acuminate, somewhat denticulate, hispid. Rac. in pairs, stalked, panicled. Cal. of Fr. erect. Nuts oblong. **p.** 5–7. Italy.

9. **sempervirens.** Hispid. Stem ascending or erect. L. elliptico-ovate. Rac. in pairs, stalked, generally with 2 L. at the base. Internal border of base of Nut with a prominent appendage. **p.** 5–7. *Fields and rough banks.* Eng. w. Fr. Eug. hills.

10. **lutea.** "Hispid. Stem ascending or erect. L. oblongo-lanceolate, somewhat denticulate, ciliate. Rac. simple. Nuts incurved, obtusely beaked, contracted into a neck at the base. **a.** 5, 6. Corsica."—Bert. Alkanna lutea, DC.; *but from Bertoloni's description, the seed seems to be that of an* Anchusa.

577. LYCOPSIS.

1. **arvensis.** L. lanceolate, repando-dentate. Rac. leafy. Tube of Cor. curved in the middle. Cal. of Fr. campanulate, erect. **a.** 6–8. *Fields and uncult.* ✓

2. **variegata.** Ascending. L. oblongo-lanceolate, repando-dentate, calloso-ciliate, bullate. Tube of Cor. nearly straight. Border oblique, *blue, processes white.* **a.** 2–6. *Uncult.* It.

3. **orientalis.** Erect, dichotomous. L. ovato-oblong, nearly entire; upper unequal at base, semiamplexicaul. Rac. leafy. Cor. *blue.* Tube curved below middle. **a.** *Corn.* Verviers (probably brought in with the wool).

578. BORRAGO.

1. **officinalis.** Branched. L. ovate. Fl. in 2 rows pointing one way. Cor. rotate, with emarginate valves. Stem single, erect. **a.** 5–9. *Uncult.* ✓

2. **laxiflora.** Rac. simple, lax. Fl.-stalks very long. Cor. somewhat campanulate, callous at the base of lobes. L. oblong, eroso-denticulate. Stems many, decumbent. **a.** 5, 6. *Moist hills.* Cors. Sard.

LXIX. SOLANACEÆ.

Calyx and Corolla 5-cleft, inferior. Stamens 5, alternating with the segments of corolla. Germen of 2 cells and many seeds, attached to thick placentas in the middle of the dissepiment. Albumen fleshy. Embryo curved.

Tribe I. *SOLANEÆ. Fruit a berry.*

579. LYCIUM.

All the species found in Europe are more or less spinescent.

1. **afrum.** L. linear, attenuate. Fl. drooping. Stalks longer than calyx. Tube of Cor. 4 or 5 times as long as calyx. Border short. Stamens bearded at base, included. **S.** 4–6 and in Autumn. Lecce.

2. **europæum.** L. lanceolate, attenuate. Fl. erect. Tube of Cor. twice as long as border. Stamens not bearded, exceeding tube. ✓

S. 5, 6 and in Autumn. *Hedges.* s. France. Italy, adr. G.

3. **barbarum.** L. subrhombeo-ovate or lanceolate, attenuate. Tube of Cor. equal to border. **S.** 6, 7. *Planted in hedges and escapes.* L. ovatum *and* L. lanceolatum *are said also to occur occasionally in hedges in Italy.*

580. SOLANUM.

1. **villosum.** Root annual. Stem angular. L. villous. Rac. simple. Fr.-stalks thickened upwards. *Berry yellow.* **a.** 7–9. *Rubbish.* s. Europe.

β. *miniatum.* Berry red. L. less villous.

2. **nigrum.** Root annual. Stem angular. L. nearly smooth. Rac. simple. Fr.-stalks thickened upwards. *Berry black.* **a.** 7–9. *Rubbish.*

β. *ochroleucum.* Berry green.

γ. *humile.* Berry waxen yellow.

δ. *stenopetalum.* Segm. of Cor. long and narrow.

In this species and the preceding the L. vary from triangular to rhomboid, ovate, or even oblong, but are always, I believe, somewhat cuneate at the base. They are in all the varieties more or less sinuate or repando-dentate, and the stem in all is sometimes winged and sometimes merely angular, and with or without setaceous teeth.

3. **moschatum.** "Stem herbaceous, unarmed. Branches angular, pubescent. L. ovate, dentato-angular, somewhat rough, ciliate. Rac. separate from L., nodding. Berries black. **p.** or **w.** 5–9. Sic."—Guss. *Considered by Bert. as a perennial var. of* S. nigrum.

4. **Dulcamara.** Stem woody, flexuose. L. ovato-cordate, smooth; upper hastato-tripartite. Corymb opposite L. Rac. cyme-like. **w.** 6, 7. *Hedges.*

β. *marinum.* Stem prostrate, angular. Very few hastate L.

5. **Pseudo-capsicum.** Woody. L. oblongo-lanceolate, somewhat repand, smooth. Stalks usually 1-flowered, separate from L. **w.** *Said to be naturalized at the village of* Arette in Béarn.

6. **sodomeum.** Woody. Straight, subulate Prickles on stem, L., and calyx. L. somewhat pinnatifido-sinuate. Corymb few-flowered. **w.** 4–9. *Dry.* Terrac. Pomp. Sic. Sard.

Besides these, we find in the S. of Eur., in field cultivation, *S. Melongena,* with ovate, downy L., and a long, ovoid, pendulous fruit; *S. insanum,* with ovate, downy L. and prickles; *S. Lycopersicum* (Love-apple), with pinnate and incise L., and a large, irregular, depressed fruit; and *S. tuberosum* (Potato), with pinnate L. and entire Lts., a small globose fruit, and tuberous root.

581. PHYSALIS.

1. **somnifera.** Stem shrubby, terete. Branches straight. L. ovate, entire. Fl. fascicled, axillary. **S.** 5–7. Pal., Term., and Cat. in Sicily. Orosei, Sard.

2. **edulis.** Downy. Stems somewhat shrubby, terete. L. cordate, somewhat repand or entire. Fl. solitary. Berries smooth, pendulous. **w.** 5, 6. Isl. Phœnicusa.

3. **Alkekengi.** Herbaceous. L. in pairs, ovate, acute, entire or dentate. Fl. solitary, stalked. Cal. of Fr. coloured. **p.** 5. *Dry hills and vineyards.* Fr. G. It.

582. ATROPA.

1. **Belladonna.** Stem erect. L. oval, entire. Fl. solitary, axillary, on long stalks. **p.** 5, 6. *Shade.* Eng. Fr. G. Sw. It.

583. MANDRAGORA.

1. **vernalis.** L. broadly ovate, the primary very obtuse, the later acute. Cal. solitary. Segm. ovate, acute, shorter than globose berry. **p.** 3, 4. Silva dei Nordi at Lodi.

2. **officinarum.** L. ovate: primary obtuse; later acuminate. Segm. of Cal. lanceolate, acuminate, as long as oblong berry. **p.** Autumn and sometimes in April. Cal. Sic.

3. **microcarpa.** L. oblongo-lanceolate: primary obtuse; later acuminate. Segm. of Cal. lanceolato-linear, with long acumen, longer than globose berry. **p.** 10, 11. Sard.

Tribe II. *VERBASCEÆ. Fruit a capsule.*

584. RAMONDIA.

1. **pyrenaica.** L. villous above, covered beneath with brown wool. **p.** 7. *Shady rocks.* Pyr.

585. NICOTIANA.

1. **auriculata.** L. ovate or oblong, acu-

minate, attenuate, with auricle on each side of stalk. Tube of Cor. slender, twice calyx. Segm. acuminate. **p.** 5. *Nat.* Orosei, Sard.

2. **rustica.** L. ovate, stalked, entire. Tube of Cor. equalling calyx. Segments of Border obtuse. **a.** 7, 8. *Nat.* Cavallino near Venice.

586. DATURA.

1. **ferox.** L. ovate, unequally sinuato-dentate. Caps. oblong, erect. Spines thick; the uppermost large and converging. **a.** 7, 8. *Rich.* Messina.

2. **Stramonium.** L. ovate, unequally sinuato-dentato. Caps. oblong, erect. Spines numerous, nearly equal. **a.** 6–9. *Rich.* Eng. Fr. G. It.

β. *Tatula.* Stem, Stalks and Nerves of L., Cal., and Cor., tinged with violet.

3. **Metel.** Pubescent. L. ovate, acute, nearly entire. Caps. globose, cernuous, with short and remote spines. **a.** Spring. *Sandy.* Messina. Flumendosa Ballau in Sard.

4. **lævis.** L. ovate, hairless, angulato-dentate. Caps. erect, without spines. **a.** 6–9. Palermo.

587. HYOSCYAMUS.

✓ 1. **niger.** L. oblong, acuminate, with coarse, acute teeth; upper sessile, amplexicaul. Fl. approximate, nearly sessile. Caps. secund. **a. b.** 5–8. *Rich.*

✓ 2. **albus.** L. ovate, sinuato-dentate or lobed; all stalked. Fl. distant, nearly sessile. Cal. with many striæ. **a. b.** 5, 6. *Rich.* mdt. Fr. It. Istria.

3. **aureus.** L. stalked, dentate, acute. Fl. stalked. Fruit drooping. **b.** *Rich.* Nice? Montp.? Narbonne. *Bert. unites this to* H. albus.

4. **auriculatus.** L. ovato-oblong, dentate. Stalks of the lower auricled at base! **a.** 5. *Mountains.* e. of Naples.

588. SCOPOLINA.

1. **atropoides.** Cor. tubuloso-campanulate. *Fl. brown and shining externally, dull within.* **p.** 4, 5. *Shade.* Carn.

2. **viridiflora.** Cor. obovato-campanulate, *green.* **p.** 4, 5. *Mountain woods.* Mt. Schemljc, Carniola.

589. VERBASCUM.

A. Anthers decurrent.
- **i.** L. decurrent to below next L. Sp. 1, 2.
- **ii.** L. decurrent, but not to below next L.
  - **a.** Anthers shortly decurrent. Sp. 3.
  - **b.** Anthers very decurrent. Sp. 4–8.
- **iii.** L. not decurrent. Flowers yellow. Hairs of Filaments purple. Sp. 9–11.

B. Anthers all reniform, nearly equal.
- **i.** Raceme nearly simple. Sp. 12–17.
- **ii.** Raceme panicled.
  - **a.** Flowers nearly sessile. Sp. 18, 19.
  - **b.** Stalks at least as long as calyx.
    - * Hairs of Filaments white. Sp. 20–23.
    - ** Hairs of Filaments purple. Sp. 24, 25.
- **iii.** Flowers axillary, solitary. Sp. 26.

A. *Anthers decurrent on the two longer Filaments.*

i. *L. decurrent to below next L., forming 3–5 wings to stalk.*

1. **Thapsus.** Woolly, soft. Longer Fil. four times as long as shortly decurrent anthers. Cor. twice calyx. Throat concave. Rac. spike-like. L. elliptic. **b.** 6–9. *Uncult.* ✓

2. **thapsiforme.** Soft, woolly. Longer Fil. twice as long as very decurrent anthers. Cor. four times calyx, nearly flat. Rac. spike-like. L. elliptic. **b.** 7, 8. *Uncult.* m. and s. Europe.

ii. *L. decurrent, but not below next L.*

a. *Anthers shortly decurrent.*

3. **montanum.** Wool yellowish. Cor. twice calyx. Throat concave. Rac. spike-like. Root-L. obvato-oblong. **b.** 7, 8. *Warm woods.* Vall.

b. *Anthers very decurrent.*

4. **Bertolonii.** Wool yellowish. Cor. four times calyx, rotate. Rac. rather lax, spike-like. L. ovato-oblong. Wings cuneate. **b.** 7–9. Apenn.

5. **phlomoides.** Wool yellow. Div. of Cor. round, four times calyx. Rac. nearly simple. Fl. in remote tufts on short stalks. Hairs of Anthers whitish. L. woolly on both sides. Root-L. oblong, stalked; upper somewhat decurrent, the ring rounded. **b.** 6–8. Fr. G. It. ✓

6. **viminale.** Tomentum somewhat floccose and deciduous. Div. of Cal. acute, at last smooth. Rac. somewhat lax at base. Hairs of Fil. whitish. Root-L. oblong, attenuate, green above. Wings obtuse. **b.** 5, 6. *Shores. Stem so flexible that it is used for bands in Iapygia.*

7. **densiflorum.** Wool yellow. Div. of Cor. rounded, three times calyx. Rac. spike-like, somewhat interrupted at base. Hairs of Fil. whitish. L. ovate, nearly naked above: lower oblongo-lanceolate, on short stalks, incise at base; upper descending in short, wedge-like wings. **b.** 6–8. *Slate quarries* on the top of the Brucciana. *Query if distinct from V. Bertolonii.*

8. **longifolium.** Tomentum yellowish. Cor. three times calyx. Divisions oblong, obtuse. Rac. somewhat branched: the lower Clusters spike-like. (Hairs of shorter Fil. purplish at base, Guss.) Root-L. oblongo-lanceolate, very long, rounded at base and hardly decurrent. **b.** 7, 8. *Mountain pastures.* Umbria.

iii. *L. not decurrent. Anthers very decurrent. Flowers yellow. Hairs of Filaments purple.*

9. **virgatum.** Hairy and somewhat viscid. Fl. axillary, sessile or on short stalks; lower clustered. Rac. long, nearly simple. L. oblongo-lanceolate. ✓ Root-L. somewhat lyrate. Stem-L. sometimes slightly decurrent, unequally dentate. **b.** 7, 8. Eng. n. Fr. It.

10. **Blattaria.** Fl. solitary, on long stalks. 3 Stamens nearly alike. Div. of Cal. acute. ✓ L. oblong. Root-L. stalked, sometimes sinuato-pinnatifid. Stem-L. amplexicaul, rarely somewhat decurrent. **b.** 6, 7. *Moist gravelly. occ.*

11. **repandum.** Smooth, or with a few viscid hairs. Pan. rod-like. Fl.-stalks solitary. Upper Stamens very small. Div. of Cal. obtuse. Lower L. oblong, stalked; upper small, cordate, amplexicaul. **b.** 7, 8. *Clayey uncult.* Sic.

B. *Anthers all reniform, and nearly equal.*

i. *Raceme nearly simple. Stem and L. covered with soft Tomentum.*

12. **niveum.** Wool very white. Stem single. Caps. somewhat acute. Segm. of Cal. ovate, acute. Cor. twice calyx. Wool of Fil. white. Rac. spike-like, very dense. L. ovato-oblong; upper acuminate, somewhat cochleate, wings cuneate. **b.** 5–7. Abruzzi and Umbria.

13. **bicolor.** Wool white, loose. Stem single. Rac. interrupted at base. Hairs of Fil. purple. Lower L. elliptico-ovate, acute, sometimes pinnato-auriculate at base; upper amplexicaul. Caps. obtuse. **b.** 5–7. e. Liguria, *rare.*

14. **Boerhavii.** Wool white. Stem single. Fl. sessile, generally in clusters. Hairs of Fil. purple. Lower L. oblong or obovate; upper cordate, amplexicaul, acuminate. Caps. obtuse. **b.** 5, 6. s. Fr. s. It.

15. **conocarpum.** Wool white. Stem single. Caps. conical, acute, exceeding calyx. Rac. lax. L. elliptico-ovate or oblong, nearly entire. Lower L. somewhat obtuse; upper acute, amplexicaul. **b.** 5–7. *Marit. rocks.* Bosa, Sardinia.

16. **angustifolium.** "Finely tomentose. Stem single. Rac. crowded. Fl. generally single. Hairs of Fil. white. L. lanceolate: lower stalked, obtuse; upper amplexicaul, acuminate. Caps. acute, equalling calyx. **b.** 6. *Sandy shores.* Cal."—Bert.

17. **simplex.** Stems many, from a woody root. Rac. simple, interrupted. Fl. clustered, nearly sessile. Hairs of Fil. white. L. ovate or oblong; upper sessile, amplexicaul. (**w.** Benth.) (**b.** Bert.) 5, 6. Monte Gargano. Calabria.

ii. *Raceme panicled.*

a. *Flowers nearly sessile. Stem and L. woolly.*

18. **mucronatum.** Very white. Pan. with long divaricate branches. Fl. in remote, globose clusters. Root-L. thick, broad, oblong, crenate or somewhat sinuate; upper cordate, amplexicaul, decurrent. Port Juvenal. *Seeds brought with the wool.*

19. **sinuatum.** Yellowish. Pan. pyramidal. Clusters lax, remote, many-flowered. ✓ Root-L. oblong, sinuato-pinnatifid, somewhat undulate; upper cordate, amplexicaul, subdecurrent. **b.** 6–9. *Dry.* s. Fr. It. Istr.

b. *Flower-stalks at least as long as calyx. Stem and L. woolly.*

* *Hairs of Filaments white.*

20. **speciosum.** Tomentum somewhat floccose on both sides of L. Branches of Pan. very long. Clusters generally many-flowered. Caps. ovoideo-oblong. Root-L. thick, long oblong, attenuate into stalk; upper sessile,

sometimes cordate, amplexicaul. **b.** 7, 8. *Grassy hills and openings in woods.* lower Austr.

21. **Gussonii.** "Greenish, tomentoso-pulverulent. Lower L. stalked, obovato-oblong, sinuato-duplicato-dentate; uppermost ovate, acuminate, denticulate, somewhat decurrent. Rac. pyramidal. Clusters scattered, many-flowered. **b.** 5, 6. *Sandy hills.* On Rio Nisi, Sicily."—Guss.

22. **pulverulentum.** Floccose on both sides of L. Stem terete. Branches somewhat angular. Pan. spreading. Clusters many-flowered. Cal. small. Div. narrow lanceolate. Lower L. attenuate; upper sessile, sometimes amplexicaul. **b.** 7, 8. *Open hills and uncult. Rare in* Eng.

23. **Lychnitis.** Mealy. L. greenish above: lower attenuate; upper sessile. Stem angular. Pan. pyramidal. Branches erecto-patent. Clusters many-flowered. *Fl. white or yellow.* **b.** 6–8. *Stony hills.*

** *Hairs of Filaments purple.*

24. **Chaixii.** Tomentum thin, whitish. Clusters lax, many-flowered. Lower L. cuneate at base, green (somewhat lyrate, Koch); upper sessile, rounded at base. **b.** 6, 7. lower Alps.

25. **nigrum.** Tomentum thin. Stem angular at top. Rac. nearly simple, long. Clusters lax, many-flowered. Lower L. cordate, on long stalks; upper nearly sessile, rounded at base. **b.** 7, 8. *Woods and uncult.*

iii. *Flowers axillary, solitary.*

26. **phœniceum.** Rac. with glandular hairs, nearly simple. Stalks many times longer than calyx. L. hairless above. Root-L. ovate or oblong, attenuate. Stem-L. few and small. **b.** 6, 7. *Open hills.* e. G. It.

In addition to these, Hybrids are frequently found, some of which have been described. I copy the following from Koch:—

a. *L. semidecurrent. Flowers yellow.*

* *Hairs of Filaments white.*

1. *Thapso-Lychnitis* (*spurium*, Koch, ed. 1). L. hoary with adpressed tomentum. Stem sharply angular at top. Anthers equal, not decurrent. All Fil. woolly. **b.** 7, 8. *Uncult. hills.* Offenbach in the Palat.

2. *thapsiformi-Lychnitis* (*ramigerum*, Schr.) L. hoary with adpressed tomentum. Stem sharply angular at top. Fl.-stalks clustered, longer than calyx. All Fil. woolly. Anthers unequal: the longer decurrent. **b.** 6, 7. *Pastures and uncult.* G. *occ.*

** *Hairs of Filaments purple.*

3. *thapsiformi-floccosum* (*nothum*, Koch, ed. 1). Stem terete. Clusters many-flowered. Hairs of Fil. white, or the longer ones purple. Anthers of longer Fil. somewhat decurrent. **b.** 7, 8. *Uncult.* Maintz.

4. *Thapso-nigrum* (*collinum*, Schr.). Stem acutely angular at top. Clusters of about 5 flowers, on stalks as long as calyx. Anthers equal. All Fil. with purple wool. **b.** 7, 8. *Stony shade.* G. *occ.*

5. *thapsiformi-nigrum* (*adulterinum*, Koch). Upper L. cuspidate. Stem acutely angular at top. Clusters of 5–7 flowers, on stalks as long as calyx. Anthers of longer Fil. decurrent. All Fil. with purple wool. **b.** 7, 8. *Pastures and gravel.* G. *occ.*

b. *L. shortly decurrent. Flowers reddish-brown. Hairs of Filaments purple.*

6. *Thapso-phœniceum* (*versiflorum*, Schr.). Stem terete. Stalks of Fl. half as long again as calyx; of Fr. nearly three times as long. Anthers of longer Fil. somewhat decurrent. **b.** 7, 8. *Uncult.* Prague.

c. *L. not decurrent. Flowers in clusters.*

7. *Lychnitidi-floccosum* (*pulverulentum*, Vill.?). L. slightly tomentose above, densely beneath; upper sessile. Branches and upper part of Stem obtusely angular. Rac. panicled. Fl. in clusters, *yellow.* Spreading Hairs of Fil. white. **b.** 7, 8. *Uncult.* Als. and Maintz.

8. *nigro-floccosum* (*schottianum*, Schr.). L. crenate, tomentose on both sides. Root-L. ovali-oblong, stalked. Upper Stem-L. cordate, semiamplexicaul. Rac. panicled. Fl. in clusters, *yellow.* Stalks twice as long as calyx. Hairs of Fil. purple. **b.** 7, 8. *Uncult.* G. *occ.*

9. *nigro-Lychnitis* (*Schiedianum*, Koch). Lower L. obtuse at base, contracted into a long stalk. Stem sharply angular at top. Rac. long. Fl. in clusters, *yellow.* Stalk twice as long as calyx. Hairs of Fil. purple. G. *occ.*

10. *nigro-phœniceum* (*rubiginosum*, W. and K.). Rac. panicled. Fl. in clusters, brown. Stalk many times longer than calyx. Hairs of Anthers purple. **b.** 6, 7. *Fields.* Brünn in Moravia. Montreux on Lake of Geneva.

d. *L. not decurrent. Flowers solitary or in pairs, yellow.*

11. *Lychnitidi-Blattaria* (*pseudo-Blattaria*, Schl.). Branches rod-like, and with Cal. and

× 25 var. alopecurum Thuill. Fl. white. L. oval elongate
non cordiformes à la base. largement crenelées, to-
menteuses sur les deux surfaces" Brebisson Fl. de

Stalks covered with short bristly hairs. Fl.-stalks as long as calyx. Hairs of Fil. violet. **b.** 6, 7. *Uncult.* Vall.

590. CELSIA.

1. **cretica.** Anthers of longer Fil. decurrent. Fl. nearly sessile. Div. of Cal. broad, serrate. Lower L. stalked, lyrato-pinnatifid; upper amplexicaul, cordate at base. **b.** 4, 5. *Rocky hills.* Sic. Sard.

LXX. SCROPHULARIACEÆ.

Calyx 4–5-cleft, persistent. Corolla of one irregular, inferior petal. Stamens 2, or 4, of which 2 are longer. Style 1, simple. Fruit 2-celled. Placenta central.

1. SCROPHULARINEÆ.—Anthers, according to Koch, of 1 cell, placed transversely on the Filament, or obliquely adnate to it. There is usually, in the only European genus, the Rudiment of a fifth Stamen, and the Flowers are in centrifugal cymes . . . . Gen. 591.
2. ANTIRRHINEÆ.—Anthers of 2 cells, without an appendage at the base. Inflorescence centripetal . . . . Gen. 592–603.
3. RHINANTHEÆ.—Anthers with a spine or mucro at base . . . Gen. 604–613.

Tribe I. *SCROPHULARINEÆ.*

591. SCROPHULARIA.

A. *Calyx without a scariose border.*

✓ 1. **vernalis.** L. cordate, acute, downy. Rac. leafy. Staminode 0. Fl. yellow, inflated. Div. of Cal. oblong, somewhat acute, recurved at top. **b.** 5, 6. *Moist thickets. occ.*

✓ 2. **peregrina.** L. cordate, coarsely and somewhat doubly crenato-serrate, smooth. Div. of Cal. ovato-lanceolate, acuminate. Fl. dingy purple. Staminode rounded. **p.** 4, 5. *Thickets and rough.* Istr. mdt. Fr. It.

B. *Calyx with a scariose border. L. simple, or, if pinnate, with the terminal Lobe large and broad.*

i. *Raceme leafy.*

3. **mellifera.** L. pinnate; lowest of 7 Lts.; floral L. of 3. All Lts. ovate, or oblong. Cymes falling short of floral L., disposed in a long, leafy raceme. Two broad nectariferous Glands on the base of corolla. **p.** 4, 5. *Moist mountains.* Sard. Cors.

4. **subverticillata.** L. lyrate, doubly serrate. Lateral Lts. lanceolate, with small intermediate ones. Floral L. lanceolate, very small. Cymes very short, in a long interrupted raceme. **p.** 5, 6. *Streams.* Sard.

5. **trifoliata.** Lower L. lyrato-pinnate or ternate; upper ternate or undivided, the terminal Div. much largest. Cymes about 5-flowered, nearly sessile. Fl. *large,* with black glands. **p.** 6. Sard. Cors.

6. **pyrenaica.** Hirsute. L. broadly cordate. Cymes stalked, many-flowered. Staminode reniform, quite entire. *Cor. yellowish.* **p.** *Rocks.* St. Beat and above Eaux-bonnes in Pyrenees.

7. **Scorodonia.** Hairy. L. ovate or cordate, prolonged; lower somewhat triangular. ✓ Bracts subulate. Staminode nearly round. Cor. brown purple. **p.** 7. Irel. Cornw. Jersey. w. Fr. Nice.

ii. *Raceme not leafy, or with only a few L. at base.*

8. **alpestris.** Hairy. Stem not winged. L. broadly cordate, toothed. Div. of Cal. rounded, with narrow margin. Staminode reniform. Cor. *greenish yellow.* **p.** Pyr.

9. **Scopolii.** Stem not winged. L. ovate or cordate, prolonged, dentato-crenate. Div. of Cal. rounded, with broad margin. Staminode round. ✓ *Cor. greenish.* **p. b.** 6, 7. *Mountain woods.* e. G. Apenn.

10. **grandidentata.** "Stem not winged. L. cordato-oblong, downy beneath, deeply and somewhat doubly toothed. Teeth divergent. Div. of Cal. rounded ovate. Staminode obcordate. **p.** or **a.** 5, 6. *Shade.* Sic."—Guss.

11. **nodosa.** Stem not winged. L. ovate or cordate, serrate, smooth; upper acute. Div. ✓ of Cal. broadly ovate. Margin very narrow. Staminode broad obcordate. Root knotty. *Fl. greenish purple.* **p.** 6, 7. *Moist thickets and hedges.*

12. **Ehrharti.** Stem and L.-stalks winged. L. ovate or cordate, serrate, smooth; upper acute. Div. of Cal. subrotund. Margin broad. Staminode 2-lobed. *Fl. dull purple.* **p.** 7–9. *Wet banks. occ.*

13. **Neesii.** Stem and L.-stalks winged. Lower L. ovato-oblong, very obtuse; upper ovate, acute. Div. of Cal. rounded. Margin broad. Staminode transversely oblong. *Cor. reddish-purple.* **p.** 7–9. *Wet banks.* Neuwied. Coblentz. Düsseldorf. Mondsee.

14. **aquatica.** Stem and L.-stalks winged. Lower L. oblong, cordate at base; upper somewhat ovate, prolonged: all obtuse, crenate, smooth. Staminode round or somewhat reniform. Cor. purple brown. **p.** 6, 7. *Wet banks. Much less common in Ger. than* S. Ehrharti.

β. *Balbisii.* L. with appendages at the base.

15. **auriculata.** Hairy. Stem and stalks slightly winged. L. cordato-oblong, crenato-dentate, with 2–4 appendages at base. Cymes dense, on short stalks. Div. of Cal. round. Margin broad. Staminode round. **p.** Sard.

C. *Calyx with scariose border. L. divided. Veins forked, hardly anastomosing.*

i. *Staminode round or reniform.*

16. **laciniata.** Smooth. L. inciso-pinnatifid, pinnate at base or rarely ovate, inciso-dentate. Fl.-stalk shorter than calyx. Margin of Div. of Cal. rather broad. **p.** 4, 5. *Rocks and walls.* Fiume, *abundant.*

17. **lucida.** Quite smooth. L. twice pinnate, or pinnate and pinnatifid. Segm. numerous, inciso-dentate. Stalks shorter than calyx. Div. of Cal. rounded, with broad margin. **p.** 4, 5. K. Nap.

ii. *Staminode lineari-lanceolate, sometimes ending in three Teeth, or wanting.*

18. **Hoppei.** L. smooth, pinnate and bipinnate. Segm. incise and dentate. Stalks usually as long as fruit. Div. of Cal. rounded. Margin broad. Tube of Cor. not twice as long as upper lip. **b.** 7, 8. *Valleys of calc. mountains.* Jura. s. Alps. Umbr. Abr.

19. **canina.** Smooth. L. pinnate, upper segments wedge-shaped at base, and confluent. Segm. toothed, incise, or pinnatifid. Stalks shorter than calyx. Div. of Cal. with broad margin. Tube of Cor. three times as long as upper lip. **p.** 6, 7. *Sandy and gravelly.* s. Europe.

20. **ramosissima.** Woody, smooth. Pan. much branched, but the separate cymes very imperfect. L. pinnate or bipinnate, acutely inciso-dentate. Div. of Cal. with broad margin. **p.** 4, 5. Sard. Cors. Toul. Nice.

Not well known.

21. **oblongifolia.** "Smooth. Stem 4-edged. L. oblongo-lanceolate, attenuate into stalk, serrate. Terminal Rac. naked. Stalks branched. **p.** 7. *Sides of streams.* Cors."—Benth.

Tribe II. *ANTIRRHINEÆ.*

592. ANARRHINUM.

1. **bellidifolium.** Root oblongo-obovate, unequally serrate. Stem L. 5–7-partite. Cor. with a spur. **b.** 7–9. *Open slopes.* s. and w. Fr. Moselle. Geneva. n. It.

593. ANTIRRHINUM.

A. *Seeds compressed.*

1. **Orontium.** Div. of Cal. exceeding corolla. Caps. ovoid, very oblique. L. lanceolate, or oblongo-linear. **a.** 7–9. *Fields.*

β. *grandiflorum.* L. wider. Fl. larger and nearer together. Cal. hardly exceeding corolla. It.

B. *Seeds ovoid, pitted.*

2. **siculum.** Lower part smooth. L. linear or lineari-lanceolate. Rac. lax, many-flowered. Stalks short. Segm. of Cal. ovato-lanceolate, somewhat acute. **p.** Nearly all the year. Rheg. Pal.

3. **tortuosum.** Smooth. L. linear. Rac. interrupted. Stalks shorter than calyx, somewhat clustered. Segm. of Cal. oblongo-ovate. **p.** 4, 5. *Walls and maritime rocks.* Fréjus. Rome. Sic.

4. **majus.** L. oblongo-lanceolate, smooth. Raceme many-flowered, glanduloso-pubescent. Stalks short. Segm. of Cal. broadly ovate. **p.** 6–8. *Walls and stony.* s. e. G. s. Fr. It.

5. **latifolium.** Hairy. L. ovate or ovato-lanceolate. Rac. lax, glanduloso-pubescent. Stalks longer than calyx. Segm. of Cal. ovali-elliptic, obtuse. **p.** 9, 10. s. e. Fr. Neufchatel.

6. **molle.** Villous. L. broadly ovate. Fl. on stalks; the lower axillary. Div. of Cal. broadly lanceolate. Caps. ovato-globose. **p.** *Rocks.* Valleys of e. Pyr.

✓ 7. **sempervirens.** Woody. L. of barren Branches suborbicular; others ovate or oblong. Stalks longer than calyx; the lower axillary. Div. of Cal. lanceolate or ovato-lanceolate, somewhat acute. **w.** 7, 8. *Calc. rocks.* e. Pyr.

C. *Stems flagelliform. L. palminerved.*

✓ 8. **Asarina.** Villous and viscid. L. broadly cordate, on long stalks. **p.** *Calc. rocks.* Pyr. Cev. Lig.

594. LINARIA.

A. Stems flagelliform. Mouth closed.
- **i.** L. palminerved. Sp. 1–6.
- **ii.** L. penninerved. Sp. 7–12.

B. Stems not flagelliform.
- **i.** Mouth of Corolla closed with a palate.
  - **a.** Stems erect. Flowers in a terminal raceme.
    - * Seeds 3-edged, not bordered.
      - † Barren Shoots 0 or very short. Sp. 13–15.
      - †† Barren Shoots long and numerous. Sp. 16–21.
    - ** Seeds flat, bordered.
      - † Barren Shoots 0 or short. Sp. 22–24.
      - †† Barren Shoots long and numerous. Sp. 25–28.
  - **b.** Stems decumbent. Margin of Seeds broad. Sp. 29–31.
  - **c.** Stems bushy. Margin of Seeds narrow. Sp. 32–34.
  - **d.** Stems diffuse. No Margin to Seeds. Sp. 35–37.
- **ii.** Mouth of Corolla open. Sp. 38–41.

A. *Stems flagelliform. Mouth of Corolla closed by a projecting palate. Flowers solitary, axillary, stalked. L. all stalked.*

i. *L. palminerved. Plant perennial.*

1. **hepaticifolia.** Hairless. L. reniform, indistinctly lobed. Div. of Cal. linear, somewhat acute, exceeding capsule. Spur shorter than tube of corolla. **p.** 6, 7. *Stony.* Cors.

✓ 2. **Cymbalaria.** Hairless. L. cordato-reniform, distinctly lobed. Div. of Cal. lineari-lanceolate, acute. Spur shorter than tube of corolla. **p.** 6–8. *Rocks and old walls.*

3. **æquitriloba.** Hairy. L. cordato-reniform, with 3 or rarely 5 distinct lobes. Div. of Cal. lineari-lanceolate, shorter than capsule. Spur shorter than tube of corolla. **p.** 6, 7. *Stony woods.* Cors. Sard. Gorgonia.

4. **pilosa.** Hairy. L. cordato-reniform, 7–11-lobed, rarely 5-lobed. Div. of Cal. narrow lanceolate, somewhat acute, shorter than capsule. Spur shorter than tube of corolla. **p.** 5–7. *Moist shady rocks.* K. Nap. Sic. Sard.

5. **pallida.** Hairy. L. cordato-reniform, with 3–5 rounded lobes. Div. of Cal. lineari-lanceolate, somewhat acute. Spur longer than tube of corolla. **p.** 7, 8. *Mountains.* Abruzzi.

6. **acutangula.** Quite smooth. L. cordato-reniform, 5–9-lobed. Div. of Cal. linear, acute, shorter than capsule. Spur as long as tube of corolla. **p.** *Stony.* K. Nap.

ii. *L. penninerved. Plants annual.*

7. **spuria.** Seeds with winding furrows. Div. of Cal. ovato-lanceolate: outer cordate at base; upper Fl.-stalks much longer than L., ✓ hairy. L. broadly ovate, entire. **a.** 7–9. *Fields.*

8. **Elatine.** Seeds with winding furrows. Div. of Cal. lanceolate, very acute. Fl.-stalks ✓ exceeding L., hairless. L. ovato-hastate. **a.** 7–9. *Fields.*

9. **Prestandreæ.** "Stems procumbent. Lower L. ovate, opposite; others hastate. Fl. axillary, on long stalks. Stalks slender, nearly smooth, spreading, exceeding L. Div. of Cal. lanceolate, as long as capsule. Seeds pitted. **a.** 8, 9. *Moist coasts.* Sic. *Fl. large, as in* L. græca."—Benth. L. commutata *of Koch is put by Bentham with* Elatine, *but it appears to me to be this plant. I add Koch's character:—*

commutata. L. hastate; lower obovate. Spur somewhat hooked. Fl.-stalks smooth. **a.** 8, 9. *Fields.* Istria. Isl. of Brioni.

10. **cirrhosa.** Seeds tubercled. Div. of Cal. lineari-lanceolate, acute. *Fl. much smaller* ✓ *than those of* L. Elatine. Fl.-stalks far exceeding L., hairless. L. hastato-sagittate, narrow. **a.** 5–7. s. Fr. It.

11. **græca.** Seeds tubercled. Div. of Cal. linear, very acute. *Fl. much larger than those* ✓ *of* L. Elatine. Fl.-stalks far exceeding L. L. ovato-hastate. **a.** 7–9. s. Eur.

12. **alsinifolia.** Seeds tubercled. Div. of Cal. lineari-lanceolate, very acute. Fl.-stalk falling short of L.-stalk. L. ovate, cordate, or hastate. **a.** Sard. *and islands between* Sard. and Cors.

B. *Flowering-stems not flagelliform.*

i. *Mouth of Corolla closed with a palate.*

a. *Stems erect. Flowers in a terminal raceme.*

* *Seeds 3-edged, not bordered.*

† *Barren shoots* 0 *or very short.*

13. **triphylla.** L. mostly in threes, ovate or oval. Fl. sessile in a dense spike, sometimes interrupted at base. Div. of Cal. oblong, or ovato-lanceolate. **a.** 5. *Dry hills.* Sic. Sard. Genoa.

14. **genistifolia.** L. scattered, lanceolate, acute, sessile or semiamplexicaul. Fl. numerous, stalked, distant. Div. of Cal. lanceolate, acute. **p.** 7. *Dry hills.* s. e. G.

15. **linifolia.** L. scattered, lineari-lanceolate or linear, acute. Fl. numerous, stalked. Div. of Cal. acuminate, on a broad base. **p.** *Sea-shore.* s. e. It. *Not in Bert.*

†† *Barren Shoots long and numerous.*

16. **aparinoides.** Stem erect; upper part naked. L. linear or subulate. Rac. villous. Fl.-stalks about as long as calyx. Div. of Cal. linear, somewhat obtuse and slightly membranous on margin. Stigma cloven. **p.** 2–7. Cal. Sic.

17. **versicolor.** L. scattered, linear. Rac. lax, downy. Fl.-stalks longer than calyx. Div. of Cal. oblongo-linear, somewhat obtuse. Margin membranous. Stigma 2-lobed. **a.** 6, 7. Mont d'Or.

18. **spartea.** Flowering-stem branched. L. scattered, lineari-subulate. Fl.-stalks much longer than calyx. Div. of Cal. linear or lineari-lanceolate, acute. Stigma 2-lobed. **a.** or **b.** *Sandy.* s. w. Fr.

19. **chalepensis.** Smooth. Fl. distant, on very short stalks. Div. of Cal. linear, as long or longer than corolla. Spur very slender, many times longer than tube. Stigma nearly entire. L. linear. **a.** 5–7. *Stony fields.* Mtp. Fiume. Cors. Sic. s. It.

20. **purpurea.** Flowering-stem branched, quite smooth. Rac. long. Stalks somewhat longer than calyx. Div. of Cal. linear, acute. Spur curved, longer than tube. Stigma nearly entire. L. linear or lineari-lanceolate. **p.** ? 6, 7. *Vineyards.* Sic. s. It.

21. **striata.** Smooth. Rac. at last, long. Stalks somewhat longer than calyx. Div. of Cal. linear or lineari-lanceolate, acute. Spur of Cor. conical, hardly exceeding tube. Segm. of upper Lip broad, hardly exceeding palate. Stigma nearly entire. L. linear or lineari-subulate. **p.** 7, 8. *Uncult.* w. and s. Eur. *Hardly in* G.

** *Seeds flat, bordered.*

† *Barren Shoots short or* 0.

22. **vulgaris.** L. scattered, linear, somewhat acute, approximate. Fl. stalked, crowded. Div. of Cal. oblongo-lanceolate, 3-nerved, acute. Capsule ovoideo-cylindrical. Disc of Seeds rough. **p.** 7–9. *Fields and uncult.*

β. *speciosa.* Less branched. Cor. twice as large. Monte Gargano.

γ. *Bauhini.* L. much broader, somewhat 3-nerved. Vall. Tyr.

23. **italica.** L. scattered, lineari-lanceolate. Fl. stalked, crowded. Div. of Cal. lineari-lanceolate, acute, nerveless. Caps. ovoideo-globose. Seeds generally rough in the middle. **p.** 7–9. *Rough uncult.* s. side of Alps.

24. **odora.** L. scattered, lineari-subulate, somewhat fleshy. Fl. distant, on short stalks. Div. of Cal. oval, oblong, or lanceolate, somewhat blunt. Caps. globose. Seeds smooth. **p.** 6, 7. *Sandy shores.* Pom. Cal. ?

†† *Barren Shoots long and numerous.*

25. **pelisseriana.** Lower L. and those of barren shoots in fours; of Flowering-stems linear. Div. of Cal. exceeding the didymous capsule. Spur of Cor. much longer than tube. Seeds with pectinato-ciliate margin. **a.** 5, 6. *Fields and uncult.* s. and w. Eur.

26. **micrantha.** Lower L. verticillate; of Flowering-stem oblongo-lanceolate. Div. of Cal. oblongo-linear, falling somewhat short of capsule. Spur of Cor. short, curved. Margin of Seeds entire. **a.** 3, 4. *Coasts* of Cal. Sard.

27. **arvensis.** Lower L. in fours; of Flowering-stem linear. Div. of Cal. oblongo-linear, shorter than capsule. Spur of Cor. short, curved. Margin of Seeds broad, entire. *Cor. pale blue, with darker lines:* upper Lip flat. *Palate whitish, with net-work of purple veins.* **a.** 7, 8. *Sandy fields.*

28. **simplex.** Lower L. in fours; of Flowering-stem linear. Div. of Cal. somewhat obtuse; lower shorter than obovate capsule. Spur of Cor. short, curved. Margin of Seeds broad, entire. *Cor. yellowish, with tender violet lines.* Sides of upper Lip reflexed. *Palate saffron, veinless.* **a.** 7, 8. *Fields.* Liége. Zürich. Coasts of Mdt.

b. *Stems decumbent. Margin of Seeds broad.*

29. **thymifolia.** L. mostly in threes, obovate or oblong. Fl.-stalks very short. Div. of Cal. oblongo-spatulate; the upper one somewhat larger. **a.** 5, 6. *Sandy shores.* s. w. Fr.

30. **alpina.** L. mostly in fours, linear or lineari-lanceolate. Fl.-stalks about as long as calyx. Div. of Cal. linear, acute, somewhat shorter than capsule. Spur as long as corolla. **a. b.** 7, 8. *Stony, and gravel of torrents.* Alps. Pyr. Abr.

31. **supina.** L. mostly scattered, linear. Fl.-stalks shorter than calyx. Div. of Cal. linear or lineari-spatulate. Spur about as long as corolla. **p.** 5. *Walls and sandy.* Fr.

c. *Stems erect, bushy. Margin of Seeds narrow.*

32. **glauca.** Glaucous, smooth. L. narrow linear, somewhat fleshy. Stalks shorter than calyx. Div. of Cal. linear. Spur slender, nearly as long as corolla. **a.** *Fields.* It.? —DC.

33. **arenaria.** Viscido-pubescent. L. oblong, or the upper lineari-lanceolate. Fl.-stalks very short. Div. of Cal. lineari-lanceolate, acute. Cor. small. Spur very short. **a.** 7, 8. *Sandy shore.* Brittany.

34. **Candollii.** Viscido-pubescent. L. oblong, or ovato-lanceolate, somewhat acute. Fl.-stalks very short. Div. of Cal. ovate, somewhat acute. *Cor. with* 2 *spots.* **a.** 5, 6. *Maritime rocks.* Brest. Rochelle.

d. *Stems diffuse. Seeds ovoid, without a margin.*

35. **reflexa.** Smooth, much branched. L. ovate, obovate or oblong, mucronate. Fl.-stalks many times longer than calyx; in Fr. reflexed. Div. of Cal. lanceolate, acute. Spur long, slender, curved. **a.** 2–4. *Fields.* s. It. Sard. Sic.

36. **flava.** Smooth. Lower L. ovate or ovato-oblong; upper oblongo-linear. Fl. in a short raceme, on very short stalks. Div. of Cal. oblong, obtuse. Spur nearly equal to corolla. **a.** 4, 5. *Sandy shores.* Cors. e. Sard.

37. **capraria.** Smooth, glaucous. L. linear, crowded. Fl.-stalks hardly shorter than calyx. Div. of Cal. lineari-lanceolate, very acute. Spur shorter than corolla. **p.** 6, 7. *Rocks and walls.* Isl. Capraja, *abundant.* Ischia.

ii. *Mouth of Corolla open. Flowers axillary or in lax racemes. Seeds furrowed.*

38. **origanifolia.** Perennial, diffuse. L. oblong or ovate, on short stalks: lower opposite; upper alternate. Fr.-stalks exceeding L. Div. of Cal. lineari-oblong, villous. Seeds oblongo-ovoid. **p.** 6, 7. *Rocks and woods.* s. France.

39. **rubrifolia.** Annual, erect. Lower L. ovate, opposite, approximate; upper smaller, few, oblong, alternate. Div. of Cal. lineari-spatulate. Ribs of the Seeds tubercled. **a.** 6. *Dry rocks.* mdt. France. Sardinia. Sicily. Amiternum.

40. **minor.** Annual, erect. L. oblongo-linear, obtuse, almost all alternate. Fl.-stalks two or three times as long as calyx. Div. of Cal. lineari-spatulate. **a.** 7–9. *Fields.*

41. **littoralis.** Annual, erect. L. oblong or lineari-oblong, mostly alternate. Fl.-stalks usually shorter than calyx. Div. of Cal. obtuse, usually exceeding corolla. **a.** 6, 7. *Shores.* Fiume. Istria.

Not well known.

42. **prætermissa.** Resembles *L. minor,* but the Mouth of Cor. is closed, and the upper Lip straight. **a.** *Fields.* Near Orléans.

595. GRATIOLA.

1. **officinalis.** L. sessile, lanceolate, 3-nerved, entire at base. Stalks axillary, 1-flowered. **p.** 7, 8. *Moist meadows.* m. and s. Europe.

596. LINDERNIA.

1. **Pyxidaria.** Procumbent. L. oblongo-ovate, entire, 3-nerved, sessile. Stalks 1-flowered. **a.** 7–9. *Inundated.* Fr. G. n. It. *occ.*

597. SIBTHORPIA.

1. **europæa.** Prostrate, rooting, hairy. L. reniformi-subrotund. Fl. small, on very short stalks. **p.** 6–9. *Moist banks.* w. Eur.

598. LIMOSELLA.

1. **aquatica.** L. lineari-spatulate, on long stalks. Div. of Cor. ovali-oblong, much shorter than tube of calyx. **a.** 7, 8. *Inundated, occ.*

599. ERINUS.

1. **alpinus.** Corymb simple, afterwards racemose. L. spatulate, crenate at the end. **p.** 5–7. *Stony, among mountains.* Sw. s. France.

600. WULFENIA.

1. **carinthiaca.** L. oblong, doubly crenate or somewhat lobed, attenuate. Stalks much shorter than calyx. **p.** 7. V. of Gailthal. upper Carinthia.

601. DIGITALIS.

A. *Tube about as long as middle division of lower lip of corolla.*

1. **ferruginea.** Cor. broadly campanulate. Middle Div. of lower Lip and Div. of Cal. very obtuse: the latter with broad membranous margin. L. oblongo-lanceolate, smooth. **b.** 7, 8. *Warm stony.* Carn. adr. G.

2. **lævigata.** Smooth. Middle Div. of lower Lip of broadly campanulate Cor., and Div. of Cal. acuminate. L. lanceolate, remotely denticulate, somewhat ciliate. **p.** or **b.** 7. *Stony hills.* Inner Carn. Fiume.

B. *Tube twice as long as middle division of lower lip of corolla.*

3. **grandiflora.** Cor. broadly campanulate, glanduloso-pubescent. Div. of Cal. lanceolate, acute. L. oblongo-lanceolate, serrulate, ciliate. Cor. *yellow*, with net-work internally of brown veins. **p.** 6, 7. *Stony hills.* m. Eur.

4. **purpurea.** Cor. broadly campanulate, externally quite smooth. Div. of Cal. ovate, acuminate. L. ovato-lanceolate, crenate, downy beneath. **b.** 7, 8. *Woods and thickets.*

5. **Thapsi.** "Stem-L. lanceolate, serrate or nearly entire, shortly decurrent, downy beneath. Lower Stalks longer than calyx. **p.** 5, 6. *Moist hills.* Sard. Cors."—Bert.

6. **purpurascens.** Cor. tubuloso-campanulate, externally smooth. Middle Div. twice as long as the lateral Div. of calyx, ovato-lanceolate (3-nerved, Koch). L. lanceolate, serrulate. **b.** 6–8. *Porphyritic mountains.* Rhine. Vosges.

7. **lutea.** Cor. tubular, smooth externally. Middle Div. half as long again as lateral. Div. of Cal. lanceolate, acute (1-nerved, Koch). L. lanceolate, denticulate. **b.** 6–8. *Calc. hills.* m. and s. Eur.

media appears to be a hybrid between *D. grandiflora* and *D. lutea.*

fuscescens, between *D. grandiflora* and *lævigata*; but there seems nothing in the description to distinguish it from *D. grandiflora*, except that the L. are small and remotely denticulate, instead of serrated.

602. PÆDEROTA.

1. **Ageria.** Div. of Cor. erect, exceeding stamens. Div. of Cal. lineari-lanceolate. Lower L. ovate. **p.** 6, 7. *Calc. rocks.* Sty. Carn.

2. **Bonarota.** Div. of Cor. somewhat spreading, shorter than stamens. Div. of Cal. lineari-subulate. Lower L. orbicular. **p.** 6, 7. Alps of lower Sty., Carinthia, and n. It.

603. VERONICA.

A. Raceme spike-like, terminal. Sp. 1–3.
B. Raceme spike-like, lateral. Sp. 4, 5.
C. Raceme at first corymbose, lateral.
  i. Calyx 4-partite.
    a. Valves of Fruit bipartite, separating at least on one side from placenta. Sp. 6–9.
    b. Valves of Fruit closely adhering to placenta. Sp. 10–14.
  ii. Calyx with a small fifth tooth. Sp. 15–17.
D. Corymb terminal.
  i. Seeds lenticular or plano-convex.
    a. Stem woody at base. Sp. 18, 19.
    b. Stem herbaceous, decumbent, perennial. Sp. 20–25.
    c. Stems erect, annual.
      * Flower-stalk shorter than calyx. Sp. 26–29.
      ** Flower-stalk longer than calyx. Sp. 30.
  ii. Seeds concave. Sp. 31, 32.
E. Plants annual. Stems prostrate. Flowers axillary, solitary. Fruit-stalk recurved.
  i. L. not lobed. Sp. 33–36.
  ii. L. lobed. Sp. 37, 38.

A. *Raceme spike-like, terminal. Tube of Corolla wider than long!*

1. **paniculata.** L. opposite or ternate, lanceolate, acute, attenuate into short stalk, equally and acutely serrate. Stalk longer than calyx. **p.** 7. *Shade.* Halle in Thuringia.

β. ticinensis, Pollini. Upper L. linear. Gravillone. Canton of Tessin.

γ. elegans, DC. More slender, and much branched. L. downy on both sides. Verviers.

2. **longifolia.** L. stalked, opposite or ternate, lanceolate, on a rounded or cordate base, acute, serrate to the end. Stalk about equal to calyx. **p.** 7, 8. *Moist meadows.* m. and c. Eur. ✓

3. **spicata.** L. stalked, opposite, rarely ✓

ternate, lanceolate, entire at the end; lower obtuse. Stalks much shorter than calyx. **p.** 7, 8. *Dry sandy.* m. and s. Eur.

β. *hybrida.* Lower L. ovate or somewhat cordate. *Calc. rocks. rare.*

B. *Raceme spike-like, lateral.*

✓ 4. **officinalis.** Hairy. Stem procumbent. L. oblong, stalked, serrate. Segm. of Cor. ovate. Caps. compressed, obovato-triangular, retuse. **p.** 5–7. *Woody hills. Not in Sic.* *V. dubia*, with only one seed in each cell, is considered as a variety of this.

✓ 5. **Allionii.** Prostrate, creeping. L. subrotundo-ovate, closely crenulate, smooth, shining. Segm. of Cor. oblong. Caps. ascending, emarginate. **p.** 8. *High mountains* of Savoy and Dau. Pyr.? Mts. of Ceresole.

C. *Raceme at first corymbose, lateral.*

i. *Calyx 4-partite.*

a. *Valves of Fruit bipartite, separating, at least on one side, from Placenta.*

✓ 6. **Beccabunga.** Stem creeping at base. L. stalked, oval, crenato-serrate, smooth, shining. Caps. roundish, slightly emarginate. **p.** 5, 6. *Wet.*

7. **pusilla.** Smooth. Lower L. elliptic, somewhat stalked; upper oblongo-lanceolate, sessile, very rarely amplexicaul, nearly entire. Pedicels spreading. Caps. broadly ovate, entire. **a.** *Rice-grounds.* Pdm.—DC.

✓ 8. **Anagallis.** Stem creeping at base. L. sessile, mostly amplexicaul, lanceolate, acute, serrate. Cal. shorter than corolla. Caps. subrotund, emarginate. **p.** 5, 6. *Wet.*

9. **anagalloides.** Erect. L. sessile, mostly amplexicaul, narrow lanceolate, acute, hardly serrate. Pedicels spreading. Caps. elliptic, obtuse. **p.** *Wet.* Montp. (**a.** 4, 5. Sicily.—Guss.)

b. *Valves of Fruit closely adhering to Placenta.*

✓ 10. **scutellata.** Stem creeping at base. L. sessile, lanceolato-linear, acute, remotely and backwardly denticulate. Rac. alternate, few-flowered. Stalks divaricate. Caps. 2-lobed, broader than long. **p.** 5–8. *Boggy. Not in Sic.*

✓ 11. **urticifolia.** Erect. L. sessile, ovate; upper very acuminate, acutely serrate. Stalks much longer than calyx. Caps. roundish, broader than long, emarginate, twice as long as calyx. **p.** 5–8. *Shady hills.* n. It. G. Fr.

✓ 12. **Chamædrys.** Stem creeping at base, marked by two hairy lines. L. nearly sessile, cordato-ovate, inciso-serrate. Stalks hardly longer than calyx. Caps. triangulari-obcordate. **p.** 4–6. *Dry meadows and pastures.*

✓ 13. **montana.** Stem creeping at base, equally pubescent. L. stalked, ovate, dentate. Rac. few-flowered. Caps. of 2 roundish, compressed, ciliate lobes. **p.** 5, 6. *Shade, occ.*

✓ 14. **aphylla.** Stem shorter than raceme! L. obovato-elliptic, on short stalks. Rac. about 4-flowered. Pedicels of Fr. erect, longer than calyx. Caps. obcordate. **p.** 6–8. *High mountains.* Alps. Apenn. Pyr. Sud.

ii. *Calyx with a smaller fifth tooth.*

✓ 15. **austriaca.** Ascending. L. nearly sessile, pinnate or pinnatifid. Segm. narrowed at base. Upper Stalks as long as acutely emarginate capsule. **p.** 5, 6. *Dry open hills.* s. G. s. Sw. n. e. It.

✓ 16. **Teucrium.** Ascending. L. sessile; middle ones rounded or cordate at base, dentate or somewhat pinnatifid. Stalks erect, about as long as acutely emarginate capsule. **p.** 4–6. *Bushy hills.* m. and s. Eur.

✓ 17. **prostrata.** Barren Stems prostrate. L. oblong or lineari-lanceolate, serrate or subincise at base; lower stalked. Stalks about as long as slightly emarginate capsule. **p.** 4–6. *Heaths and open hills.* Fr. G. It. *occ.*

D. *Corymb terminal.*

i. *Seeds compressed, lenticular or plano-convex.*

a. *Plant woody at base.*

✓ 18. **fruticulosa.** L. oblong; lower smaller. Pubescence of Rac. spreading, glandular. Cal. hardly shorter than ovate capsule. Germen subrotund, very obtuse. *Fl. lilac.* **w.** 7. *Very high.* Alps. Lig. Pyr. Cors.

✓ 19. **saxatilis.** L. oblong, all obtuse, crowded at base. Pubescence of Rac. without glands. Cal. shorter than ovate, acute germen. *Fl. bright blue.* **w.** 6, 7. *Very high.* Alps. Vosges. Apuan. Corsica. Scotl.

b. *Herbaceous, perennial, decumbent.*

✓ 20. **nummularia.** Stems creeping, much branched, somewhat woody at base. Lower L. scale-like; others crowded, roundish ovate, quite entire, 1-nerved. Rac. capitate. Stalks shorter than calyx. **p.** 7. *High.* Pyr.

✓ 21. **alpina.** Stems decumbent, nearly simple. L. elliptic; lower smaller, rounded. Rac. hairy, without glands, short. Caps. oblongo-ovate, emarginate. **p.** 7, 8. *High grassy mountains.*

22. **serpyllifolia.** Stems decumbent, much branched. L. ovate or oblong; lower smaller, rounded. Rac. lax. The upper L. passing into lanceolate bracts. Caps. obtusely emarginate. **p.** 5, 6. *Moist.*

23. **repens.** "Stem creeping. L. subrotundo-ovate, stalked, entire or crenate. Fl. stalked. Style nearly three times as long as capsule. **p.** 6, 7. *Mountains.* Cors."—BERT.

24. **Ponæ.** Erect. L. sessile, ovate, serrato-crenate. Rac. lax, many-flowered. Stalks two or three times as long as downy calyx. Caps. ovate, emarginate. **p.** 6, 7. *High shade.* Pyr.

25. **bellidioides.** Stem simple, erect. L. obovate, obtuse; lower in rosettes. Rac. few-flowered, short and crowded, villous. Caps. obovate, somewhat emarginate. **p.** 7, 8. *High grassy.* Alps. Pyr. Sud.

c. *Annual, erect.*

* *Stalk shorter than calyx.*

26. **arvensis.** L. undivided: lower ovate, stalked, not attenuate; upper sessile, lanceolate. Caps. 2-lobed. **a.** 3–8. *Fields.*

27. **peregrina.** L. undivided: lower obovato-oblong; upper lineari-oblong: all wedge-shaped at base. Caps. obcordate. **a.** 4, 5. *Cult.* s. Fr. Verdun. Hamb.

28. **verna.** Upper L. pinnatipartite; lower ovate, undivided. Upper floral L. bract-like, entire. Caps. broadly obcordate. Lobes rounded. **a.** 4, 5. *Sandy fields.* m. and s. Europe.

29. **digitata.** Upper L. pinnatipartite: lower ovate, nearly undivided. Upper floral L. bract-like, nearly entire. Caps. rigid, cuneate, truncate. **a.** 3–5. Montp.?

** *Stalk longer than calyx.*

30. **acinifolia.** L. ovate, 1-nerved. Bracts lanceolate, shorter than the somewhat spreading pedicels. Lobes of broadly cordate Caps. divaricate. **a.** 4, 5. *Fields.* Fr. Rhinc. adr. G. Italy.

ii. *Seeds concave.*

31. **triphyllos.** Lower L. ovate; upper digitato-partite. Stem branched. Rac. lax. Fl.-stalk longer than calyx or bract, spreading. **a.** 3, 4. *Moist fields.* Fr. Ger. It., n. of Po. Corsica. Sardinia.

32. **præcox.** L. undivided, cordato-ovate. Floral L. lanceolate. Stem branched. Rac. lax. Stalks as long or longer than calyx. Caps. turgid, emarginate. **a.** 3, 4. *Fields.* Fr. G. Italy.

E. *Plants annual. Stems prostrate. Flowers axillary, solitary. Fruit-stalk recurved.*

i. *L. not lobed.*

33. **agrestis.** L. ovate, serrato-crenate, as long as flower-stalk. Caps. emarginate: sides of notch rounded, with scattered, glandular hairs. Seeds 4–8 in each cell. **a.** 3–9. *Fields.*—KOCH.

34. **didyma.** L. somewhat cordate, serrato-crenate, as long as flower-stalks. Caps. emarginate, densely pubescent: sides of notch rounded. Seeds 8–12 in each cell. **a.** 3–9. *Fields.*—KOCH.

35. **opaca.** L. somewhat cordate, serrato-crenate, as long as flower-stalks. Caps. emarginate: sides of notch rounded. Lobes keeled. Hairs of Caps. curled, without glands. Seeds 3–5 in each cell. **a.** 3–5. *Fields, occ.*—KOCH.

36. **Buxbaumii.** L. somewhat cordate, crenato-serrate; upper shorter than flower-stalks. Terminal Notch of Caps. widely spreading, with nearly straight sides. Caps. reticulate with raised veins. **a.** 4, 5. *Fields.* s. Eur., *but, as it appears, gradually spreading in the North.*

ii. *L. lobed.*

37. **hederifolia.** L. cordate, 5–7-lobed, stalked, about as long as flower-stalk. Div. of Cal. cordate, acute. Cal. erect in the fruit. Seeds cup-like. **a.** 3–5. *Cult. Pale blue.*

38. **Cymbalaria.** L. cordate, 5–7-lobed, stalked, falling short of upper flower-stalks. Segm. of Cal. elliptic, spreading in the fruit. **a.** 2–5. *Cult. and walls.* mdt. Fr. G. It.

Tribe III. *RHINANTHACEÆ.*

[I follow Bentham in the distribution of the Genera of this Tribe.]

604. EUFRAGIA.

1. **latifolia.** L. ovate: lower crenate; up-

per palmate. Anthers smooth. **a.** 4, 5. *Pastures.* s. Fr. It. Istria.

2. **viscosa.** L. oblong or ovato-lanceolate, serrato-crenate, undivided. Anthers hairy. **a.** 7–9. *Moist.* w. and s. Eur.

605. TRIXAGO.

1. **apula.** Lower Lip of Cor. longer than upper. **a.** 6. *Sandy shores.* s. Fr. It. L. with large, nearly opposite, obtuse teeth.

606. EUPHRASIA.

1. **officinalis.** L. ovate, with 4–5 teeth on each side. Teeth of upper L. mucronate. Upper lip of Cor. of 2 spreading, toothed lobes; Div. of lower lip deeply emarginate. (Caps. oblongo-obovate, Godr.) **a.** 7, 8. *Heaths and pastures.*

β. nemorosa, Godr. Caps. lineari-oblong.

2. **minima.** L. ovate, with 4–5 teeth on each side. Teeth of upper L. mucronate. Upper lip of Cor. of 2 bidentate, connivent lobes; lower lip *generally yellow.* Div. deeply emarginate. **a.** 7, 8. *Mountain meadows.* Alps.

3. **salisburgensis.** L. lanceolate or oblong, cuneate at base, with 2 or 3 teeth on each side. Teeth of upper Lip and of Cal. cuspidato-aristate. Upper lip of Cor. of 2 toothed lobes; Div. of lower deeply emarginate. **a.** 7, 8. *Mountains.*

4. **tricuspidata.** L. linear, entire or with one tooth on each side. Teeth of L. and of Cal. acute, unarmed. Upper lip of Cor. of 2 toothed lobes; Div. of lower deeply emarginate. **a.** 7, 8. *Mountain woods.* s. Tyr.

607. ODONTITES.

A. *Anthers bearded along the openings of the cells.*

1. **rigidifolia.** Erect. L. linear, quite entire. Floral L. somewhat ovate, acute. Spikes interrupted. Helmet obovate, longer than lower lip. **a.** 9–11. *Dry hills.* Sic.

B. *Anthers connected by a few hairs at the top; none along the opening.*

2. **rubra.** L. lineari-lanceolate, on a broad base: all remotely serrate. *Cor. purple,* about twice as long as calyx, densely pubescent. Style exceeding corolla. **a.** 6–9. *Clayey fields and borders.*

3. **serotina.** L. lanceolate, acuminate, somewhat narrowed at base: all remotely serrate. Cor. *purple,* about twice as long as calyx, densely pubescent. Style exceeding corolla. **a.** 7, 8. *Dry hills.* s. Sw. It.

4. **corsica.** "Stem slender. L. linear, entire, obtuse, rough. Floral L. somewhat ovate, obtuse. *Cor. purple,* hardly exceeding calyx, densely pubescent. Style equalling corolla. **a.** 7, 8. *High mountains.* Cors. Sard."—Bert.

5. **Jaubertiana.** L. lineari-lanceolate; upper nearly entire. Cor. *yellowish or tinged with purple,* pubescent. Helmet hardly contracted at base. Style falling short of corolla. **a.** 8–10. *Calc. pastures.* Champs d'Adené near Nevers. Moret near Orléans.

6. **viscosa.** Upper part viscid. L. linear or lineari-lanceolate, nearly entire. Cor. *yellow.* Helmet truncate, narrowed at base. **a.** 8. *Barren hills.* s. Fr. Vall. Pdm.

C. *Anthers quite hairless.*

7. **lanceolata.** L. lanceolate, serrate. Cor. finely downy, *yellow.* Anthers exceeding helmet. **a.** 7, 8. *Dry hills.* s. e. Fr. Savoy. Pdm. (Anthers with a short white beard, Bert.)

8. **Bocconi.** Quite smooth, woody. L. lineari-lanceolate, 3-nerved, quite entire. Rac. rather dense, secund. Cal. without glands. Cor. smooth, incurved, contracted at base. **a.** 8–10. *Mountains* of Madonie and of Busambra, Sicily.

9. **lutea.** L. linear, mostly entire. Cor. hairy, *yellow.* Anthers exceeding helmet. **a.** 7, 8. *Calc. hills.* m. and s. Eur.

608. BARTSIA.

1. **alpina.** L. ovate; upper amplexicaul: all crenato-serrate. **p.** 7, 8. *Moist gravelly mountains.*

2. **spicata.** L. ovate: lower with a few large teeth; upper entire. Spikes numerous, crowded, secund. **p.** 7. *Calc. rocks.* L'Héris and near Bagnères de Luchon, Pyr.

609. RHINANTHUS.

1. **Crista-Galli.** Lips of Cor. porrect, hardly one-third longer than calyx. Appendage of Helmet ovate, as wide as long. Bracts crenate. L. oblongo-lanceolate. **a.** 5, 6. *Moist meadows.*

2. **major.** Lips of Cor. porrect, half as long again as nearly hairless calyx. Appendage ovate, longer than broad. Bracts coloured. L. oblongo-lanceolate. **a.** 5, 6. *Meadows. occ.*

β. *alectorolophus.* Cal. villous. Margin of Seeds narrower.

3. **angustifolius.** "Smooth. Appendage of Helmet of Cor. ovate or oblong. Cor. at least half as long again as nearly smooth calyx. Lower L. linear; upper lanceolate, acuminate. **a.** *Pastures.* m. and s. Eur."—BENTH.

4. **alpinus.** Lips of Cor. spreading. Appendage oblong. L. oblongo-lanceolate (or attenuate on a lanceolate base, KOCH). **a.** 7, 8. *Mountains.* G.

Doubtful.

5. **buccalis.** Has a 3-keeled back to the Seeds, instead of a wing. Harz.—BENTH.

6. **Reichenbachii** is like *major,* except that the Seed has no wing.—BENTH.

610. RHYNCOCORIS.

1. **Elephas.** Beak of Cor. with a tooth on each side. Seeds globose. L. oval. **a.** (**p.** GUSS. and BERT.) 6, 7. *Cold and shady streams.* Sic. Cal.

611. PEDICULARIS.

A. Helmet beaked, without teeth.
  i. Stem scape-like, naked or with 1 or 2 L. Sp. 1–8.
  ii. Stem leafy. Sp. 9–11.
B. Beak conical, ending in 2 teeth. Sp. 12–16.
C. Helmet without beak or teeth.
  i. Stem with opposite L. Sp. 17–19.
  ii. L. in whorls. Sp. 20.
  iii. Stem scape-like. Sp. 21, 22.
  iv. Flowers radical, solitary. Sp. 23.
D. Tube of Corolla spreading into a campanulate mouth, which is closed by the erect lower lip. Sp. 24.

A. *Helmet beaked, without teeth.*

i. *Stem scape-like, naked or with* 1 *or* 2 *L.*

1. **Jacquini.** Larger Fil. with scattered hairs. Beak linear. Cal. hairy only on nerves. Div. leaf-like, unequally crenate, recurved at top. L. deeply bipinnatifid and toothed. **p.** 6, 7. *High wet.* e. Alps.

2. **rostrata.** Longer Fil. bearded above middle. Beak linear. Cal. everywhere hairy. Div. leaf-like, unequally crenate, recurved at top. L. pinnatipartite and doubly serrate. **p.** 7, 8. *High moist.* Alps. Pyr.

3. **Portenschlagii.** Longer Fil. bearded above middle. Beak short, conical. Cal. hairy on nerves and margin. Div. leaf-like, unequally crenate, recurved at top. L. pinnatifid and doubly toothed. **p.** 6, 7. *Very high granite.* Sty.

4. **asplenifolia.** Fil. without hairs. Beak linear. Cal. woolly. Div. leaf-like, hooked at top. L. pinnatifid and doubly toothed. **p.** 7, 8. *High wet.* e. Alps.

5. **tuberosa.** Fil. bearded above. Beak linear. Div. of Cal. leaf-like, inciso-dentate, straight. L. bipinnatipartite and toothed. **p.** 7, 8. *High moist.* Alps. Pyrenees. Apennines.

6. **gyroflexa.** Fil. bearded above middle. Beak short, conical. Cal. densely pubescent. Div. leaf-like, pinnatifid and toothed, straight. L. pinnate, pinnatifid, dentate. **p.** 7, 8. *High.* Alps of Dauphiné and Savoy. Monte Baldo. Apennines.

7. **fasciculata.** "Root bundled. Stems low, tufted. L. narrowly bipinnatifid. Segm. distant, toothed. Spike dense. Div. of Cal. inciso-multifid. Beak of Helmet short, terminating abruptly, eroso-crenate. **p.** 7. *Mountains.* Abruzzi."—BERT. *Bentham refers this to* P. gyroflexa.

8. **cenisia.** "Stems ascending, with a few L. at the base only. Lts. pinnatifid. Cal. covered with white wool, inflated: 4 of the Div. cristato-dentate, fifth lineari-subulate, entire, short. Beak linear, cloven, crenate. **p.** 7, 8. Savoy."—GAUD. Pdm. Lig. Pyr. *Var. of* P. rostrata, *according to Bentham.*

ii. *Stem leafy.*

9. **incarnata.** Fil. smooth. Beak linear, emarginate. Cal. woolly. Div. lanceolato-subulate, quite entire, straight. L. bipinnatifid and serrulate. **p.** 7, 8. *High moist.* Sar. Sw. c. Alps.

10. **adscendens.** Fil. bearded. Beak linear, emarginate. Cal. smooth. Div. downy on margin, acuminate, quite entire, straight. L. bipinnatifid, dentate. **p.** 7, 8. *Calc. mountains.* Sard. Sw.

11. **atrorubens.** Upper part of longer

Fil. hairy. Beak conical, somewhat toothed. Cal. woolly. Div. broad lanceolate, acuminate, serrulate. L. deeply pinnatifid, inciso-serrate and serrulate. **p.** 7, 8. *Very high grassy.* Mt. Cenis. Great St. Bernard. Monte Albula.

B. *Beak conical, ending in two teeth.*

12. **palustris.** Cal. of 2 inciso-dentate, curled lobes. L. once or twice pinnatifid. Segm. oblong, inciso-dentate. Stem erect, branched. **p.** or **b.** 6, 7. *Boggy meadows.*

13. **sylvatica.** Cal. with 5 leaf-like, inciso-dentate, curled divisions. L. pinnatipartite, inciso-dentate. Central Stem short. Branches long, prostrate. **p.** or **b.** 5–7. *Springy.*

14. **sudetica.** Cal. 5-cleft, villous on angles. Teeth undivided, lanceolate, serrulate. L. pinnatifid, with broad rachis. Segm. lanceolate, acute, somewhat inciso-serrate. Stem simple, erect. *Fl. pink.* **p.** 6, 7. *Springy.* Sudetes.

15. **Frederici.** Cal. woolly, with 5 long lanceolate, acute teeth. L. pinnate. Lts. oblong, acuminate, pinnatifid, mucronato-serrate. Stem erect. (*Fl. pink*, BENTH.; *yellowish*, KOCH.) **p.** 5. *Grassy slopes.* Mount Slavnik.

16. **comosa.** Cal. downy on angles. Teeth very short, ovate, obtuse. L. pinnate. Lts. oblong, acuminate, pinnatifid. Segm. mucronato-serrate. *Fl. yellowish.* **p.** 6–8. *Mountains.* s. and m. Eur., BERT.; *but, according to Koch, hardly found in Ger. or Sw.* it. Alps. Abruzzi.

C. *Helmet without beak or teeth. Capsule compressed, oblongo-ovate.*

i. *Stem with opposite L.*

17. **Hacquetii.** Cal. cloven to middle, sheath-like, with 5 very short teeth. Longer Fil. bearded. L. pinnate. Lts. deeply pinnatifid. Segm. lineari-lanceolate, unequally mucronato-serrate. **p.** 5. *Mountains.* Carn. *Var. of* P. foliosa, *according to Benth.*

18. **foliosa.** Cal. with 5 short teeth, acuminate, on a triangular base. All Fil. bearded. L. pinnate. Lts. pinnatifid. Segm. lineari-lanceolate, inciso-mucronato-serrate. **p.** 7, 8. *Gravelly.* Alps. Pyr. Ap. Istria.

19. **recutita.** Cal. with 5 lanceolate teeth, nearly as long as tube. L. pinnatipartite, segments lanceolate, pinnatifido-dentate, denticulate; upper broadly confluent. **p.** 7, 8. *High moist meadows.* Alps.

ii. *L. in whorls.*

20. **verticillata.** Cal. inflated, hirsute, cloven at top. Teeth very short. L. deeply pinnatifid. **p.** 7, 8. *Moist grassy mountains.*

iii. *Stem scape-like.*

21. **rosea.** Cal. woolly, 5-cleft. Teeth equal, lanceolato-subulate. L. pinnate. Lts. narrow lanceolate, acutely serrate. **p.** 7, 8. *Calc. mountains.* Mont Cenis. Tyr. Carn.

22. **versicolor.** Cal. woolly. Teeth unequal, lanceolate, recurved at top. L. pinnate. Lts. oval, doubly crenate; upper tiled downwards. **p.** 6. *High rocks and gravel.* Alps.

iv. *No Stem. Stalks 1-flowered, among L.*

23. **acaulis.** Helmet villous on margin. Teeth of Cal. leafy, inciso-dentate. L. pinnate. Lts. ovate, pinnatifido-incise. **p.** 4, 5. *Grassy hills.* s. Tyr. Carn. n. It.

D. *Tube of Corolla spreading upwards into a campanulate mouth, which is closed by the erect lower lip.*

24. **Sceptrum.** Teeth of Cal. 5, oblong, obtuse, unequally crenate. L. pinnatifid. Lts. ovato-oblong, obtuse, doubly crenate. Bracts ovate, undivided. **p.** 6, 7. *Boggy meadows.* Munich. Salzb. Sty. Mor.

612. MELAMPYRUM.

A. *Spike 4-sided.*

1. **cristatum.** Spike closely tiled. Bracts cordate, folded at top, recurved, pectinato-dentate. **a.** 6, 7. *Dry woods and pastures.*

B. *Spike lax, rounded.*

2. **arvense.** Bracts ovato-lanceolate, acuminate, marked beneath with two rows of dots. Cal. about equalling tube of corolla. Teeth long, setaceous, on an ovate base. **a.** 6, 7. *Dry fields in a barren soil.*

3. **barbatum.** Bracts ovato-lanceolate, acuminate, without dots. Cal. about one-third of tube of corolla. Teeth ovate, acuminate. **a.** 5, 6. *Fields.* adr. G. Aust. Mor.

C. *Spike very lax, secund.*

4. **nemorosum.** Bracts cordate, toothed. Cal. hirsute, half as long as corolla. Teeth

lanceolato-subulate, spreading. **a.** 7, 8. *Shade.* m. Eur. *Not on Rhine.*

5. **pratense.** Bracts lanceolate, toothed at base. Cal. smooth, about one-third of corolla. Fl. spreading horizontally. **a.** 5–7. *Woods and heaths.*

6. **sylvaticum.** Bracts lanceolate, very rarely with 1 or 2 teeth. Cal. smooth, as long as corolla. Fl. erect. **a.** 7, 8. *Hill woods. occ.*

613. TOZZIA.

1. **alpina.** L. ovate, often amplexicaul. Fl. solitary, without bracts, on short axillary stalks. **p.** 7, 8. *High wet.* Alps. Sud. Pyr. Apennines.

LXXI. OROBANCHACEÆ.

Corolla irregular. Stamens 4, 2 of them longer. Germen on a fleshy disc, 1-celled, with 2 or more parietal placentas. Stigma 2-lobed. Fruit with 2 valves and many seeds.

614. OROBANCHE.

In this obscure genus we have hardly any characters that can be depended upon. Those founded on the form of the Corolla, whether short, campanulate, and bellying in front, funnel-shaped, or with a nearly cylindrical tube, are good as far as they go. In the second division the tube is contracted above the germen, or rather the swelling of the germen dilates the lower part of the tube,—a circumstance which only takes place in two or three species of the first division. The nature of the curve on the back of the tubular flowers is perhaps sometimes of value; but a considerable difference in this respect takes place in the flowers of the same spike, and it is affected by the growth of the fruit. A little curve backwards at the tip of the upper lip occurs in most if not in all the species. The divisions and proportion of the lower lip deserve, perhaps, more attention than they have hitherto received. They are always rounded and plaited, very rarely with an acumen, and more or less separated by a plaited, or sometimes inflated, interval. The middle lobe in some species is said to be twice as large, or twice as long, as the lateral. This I have not been able to verify. In one or two species of the first division the corolla is said to be quite hairless, but in the rest it is generally more or less covered with glandular hairs; and these, in a few instances, extend to the inside of the upper lip. The Filaments in some are densely, and, I believe, constantly villous at the base; in others they are quite smooth; but in the majority of instances they vary from quite smooth to hairy with scattered hairs. The Glands on the top of the filaments and the style seem to be still more uncertain. The Anthers are in general ovoid, prolonged, acute, mucronate; but in *O. minor*, and perhaps some other species, they are almost round, and with a hardly distinguishable point. The Stigma, more or less completely divided into two lobes, may perhaps be of use; but the colour, which has been much insisted upon, certainly varies in some species, and is suspicious in all. Reuter, in the 'Prodromus,' forms two sections dependent upon the position of the Stamens, near the base, or near the middle of the tube of the corolla. In his descriptions of his first section we have the terms "on the base," "at the base," "near the base," and "above the base." The latter expression is, however, also used in the next section, as in *O. Salviæ*, *O. laurina*, *O. glaberrima*, and *O. macrosepala*. In *O. littorea* and *O. loricata* they are described, from Bertoloni, as a little above the base; in *O. fragrantissima*, somewhat distant from base; in *O. serotina*, toward the base. Bertoloni often measures the distance; but *O. Crithmi*, *O. canescens*, and *O. australis*, where the distance from the base of the corolla is only one line, are placed by Reuter among those whose stamens are inserted near the middle of the tube, as well as those where they are 2 lines or 2½ lines from the base.

The next point is the Calyx. According to Godron, '*Fl. de Lorr.*,' the Sepals in Div. A are touching or united in *O. major*, *O. elatior*, *O. caryophyllacea*, *O. Teucrii*, and *O. rubens*; quite separate in *O. Cervariæ* (or *brachypetala*), *O. Picridis*, and *O. Epithymum*. They are almost always ovate at the base. In some species they are described as entire, in others as constantly dividing into 2 or 3 segments. So many, however, vary in this respect, that we may fairly doubt if the character is to be trusted. The segments in all the species are generally more or less unequal. The number of nerves is a leading character with M. Reuter; but in one of the most common species, *O. major* (*O. Rapum* of some authors), botanists are not agreed on this head; and in many others it is acknowledged to be obscure. Still it is a useful character, as is also the form of the segments—sometimes gradually tapering, at others abruptly and finely acuminate; but in this, and in most other characters, there is so much variety in one species, and such a gradual progression through the genus, that it is with difficulty we obtain grounds for any specific characters, and I have been totally unable to construct an analysis of the genus. The particulars on which I have attempted to form my subdivisions are not those which seemed to me the most likely to be constant, but such as I found most generally noticed in the descriptions I had before me. I have chiefly followed Reuter, because no other writer has above half the number of species.

Some assistance may be obtained from the Scales and Bracts. The lower scales are, I believe, always broader and closer together than the upper.

A. *Bracts solitary. Capsule splitting in the middle.*

i. *Stamens from near base of corolla.*

a. *Sepals with* 5 *or more nerves.*

* *Style more or less glandular.*

† *Filaments hairy at the base.*

1. **cruenta.** Sep. cloven. Cor. campanulate, evenly arched on the back, bellying in front. Mouth bloody. Margin glanduloso-denticulate. Upper Lip hardly vaulted; lower with 2, smooth, bladdery protuberances, middle lobe largest. Stigma with a yellow disc and purplish-brown margin. **p.** 5–7. *On Leguminosæ.* m. and s. Eur.

2. **procera.** Sep. broadly ovate. Cor. campanulate, evenly arched on the back, bellying in front. Margin somewhat glandular, denticulate. Middle Div. of lower Lip somewhat the largest. Fil. with only a few hairs at the base. **p.** 6. *On Cirsium arvense.* Mannheim.

3. **variegata.** Sep. deeply cloven, on an ovate base. Segm. lanceolate, acuminate. Cor. campanulate, evenly arched on the back, bellying in front, pale yellowish, with a reddish mouth. Margin denticulate. Upper Lip vaulted; lower with 2 plaited protuberances. Lobes small. Stamens and style hirsute. Stigma yellow. *Scape slender,* 4 *to* 9 *inches high. Scales lanceolate.* Bracts lanceolate, equalling or exceeding flowers. **p.** 7. s. Fr. Pdm. Gen. Carr. Corsica.

4. **Spartii.** Sep. equally cloven, on an ovate base. Cor. campanulate, nearly straight on the back, bellying in front. Margin denticulate. Lower Lip with 2 protuberances; the middle lobe largest. Style somewhat villous. Stigma yellowish, afterwards brown. *Scape* 1 *to* 2 *feet high. Scales ovato-lanceolate.* **p.** 5. *On Spartium junceum.* w. Fr. Gen. Sic. *Bertoloni unites this to* O. cruenta.

5. **condensata.** Sep. nearly touching in front, broadly ovate, cloven, the front lobe obtuse. Cor. campanulate, bellying in front, evenly arched on the back. Margin denticulate. Middle Lobe of lower Lip longest. (Style smooth, Bert.) Stigma thick, yellow. *Stem somewhat flexuose. Scales ovate, rather obtuse. Bracts shorter than corolla.* (*Resembles* O. cruenta, *but the lower Scales are broader, the Cor. of a deeper blood-colour, the Div. of the lower Lip are somewhat acute, and the Stamens puberulous at the base, not hirsute.*—Bert.) **p.** 5. *On Genista, &c.* Prov. Cors. Sard.

6. **thyrsoidea.** Sep. or their Segm. lanceolato-subulate, on a broadly ovate base. Cor. campanulate, *yellowish.* Upper Lip entire, vaulted; lobes of lower rhombeo-acuminate, denticulate, or slightly and sharply 3-lobed, finely ciliate. Stamens smooth, or somewhat hairy at base. Anthers large, oblong, with a long spur. Style sometimes smooth. Stigma yellow. *Scape and Bulbs very thick. Scape hollow. Lower Scales imbricate, all approximate. Spike very dense.* **p.** 6. *On Genista.* Cors. Sard.

7. **fœtida.** Sep. united in front, broadly ovate at base, and suddenly contracted into lineari-filiform segments. Cor. campanulate, somewhat arched on the back. Margin not ciliate. Lobes of lower Lip ovate, somewhat acute, separated by a broad sinus. Anthers somewhat villous at the sutures. Stigma yellow. Spike dense, comose. Bracts lanceolate, acuminate, equalling or exceeding flowers; upper filiform. **p.** *On Leguminosæ.* e. Pyrenees.

8. **pruinosa.** Sep. cloven. Segm. subulate. Cor. campanulate, slightly curved, *white or pinky, with blue veins.* Margin crenulate. Upper Lip 2-lobed; lobes of lower adjacent.

(Style villous at base, Guss.) Stigma violet. *Scape* 6 *in. to* 2 *feet, hollow. Scales and Bracts lanceolate or ovato-lanceolate, with long acumen, nearly equalling corolla. Smell agreeable.* **a.** 4–6. *On Vicieæ, Hyperica, Calendulæ. Guss. describes the lower Lip as bigibbous; Reuter, or rather Koch, says that the middle lobe is twice as large as the others: neither of which I find true in Roman specimens. Query if different species.*

9. **speciosa.** Sep. or Segm. lineari-lanceolate. Cor. very broad campanulate. Back nearly straight. Margin denticulate. Upper Lip 2-lobed; the middle lobe of the lower largest. Stamens with short scattered hairs at base. Lobes of Stigma spherical. *Scape and Bracts covered with white, curled, glandular hairs. Bracts nearly equalling corolla. Differs from* O. pruinosa *in having larger flowers, of one colour, and larger and nearly entire sepals.* Toulon. (*Query if the same as* pallidiflora *of Wimm and Grab.*—Reuter.)

10. **caryophyllacea.** Sep. usually cloven, contiguous in front or connate. Segm. triangulari-subulate, acuminate. Tube of Cor. funnel-shaped. Margin somewhat denticulate. Upper Lip sharply curved; the sides porrect. Stamens hairy nearly their whole length. Stigma *purple,* without a margin. *Scape* 4–12 *in., hollow. Scales ovato-lanceolate, regularly nerved. Bracts ovato-lanceolate, acuminate, somewhat shorter than corolla.* **p.** 5–7. *On Galia and Trifolium repens. Has an agreeable smell of cloves.*

β. Ligustri, Godr. Stigma yellow.

11. **Teucrii.** Sep. cloven, contiguous in front or connate. Segm. lanceolate. Corolla campanulato-tubulose, *yellowish at base,* straight on the back. Margin somewhat denticulate. Upper Lip bent down, hairy within, margin spreading; Div. of lower nearly quadrangular, separated by a broad, obtuse sinus. Stamens hairy to middle, and with some glandular hairs above. Style white, at last purple. Stigma minutely tubercled, bloody brown. **p.** or **a.** 6. *On Teucrium, Thymus, and Bromus.* Fr. G. Sw.

12. **Epithymum.** Sep. ovate, with a long, subulate acumen. Cor. campanulate, evenly arched on the back. Margin toothed. Upper Lip 2-lobed, glandular on both sides (the hairs seated on a minute tubercle, Koch); lower lip very wide, the lobes widely separated by an inflated protuberance. Fil. with scattered hairs at the base, sometimes smooth. Stigma dark purple (sometimes yellow, Godron), without a raised margin. *Plant of a dingy yellow stained with purple. Scent at first agreeable, afterwards unpleasant. Scape* 2–10 *inches, hollow. Bracts lanceolate, acuminate, shorter than corolla.* **p.** 6, 7. *On Thymus and Satureja.* m. and s. Eur.

13. **Scabiosæ.** Sep. or Segm. attenuate into a subulate point on an ovate base. Cor. campanulate, ochraceous and purple, arched on the back. Margin acutely toothed. Upper Lip with short, scattered, glandular hairs on both sides (each seated on a dark tubercle, Koch). Fil. with scattered hairs below. Style nearly smooth. Stigma dingy purple. **p.** 6. *On Scabiosa and Carduus.* Alps. *Differs also from* O. Epithymum *in its taller and thicker, and connivent, not arcuato-descendent, anthers, and in the dingy purple colour of the whole plant.*

14. **pallidiflora.** Sep. broadly ovate, suddenly contracted into a subulate acumen. Cor. campanulate, nearly straight, bent down at top, yellowish with red veins. Margin acutely denticulate, with glandular hairs on both sides, each seated on a yellowish tubercle. Fil. with scattered hairs below. **p.** 6. *Differs from the preceding in the Sep., the colour of the Fl., and the yellow tubercles of the hairs.*

15. **fuliginosa.** Sep. or Segm. with a long subulate acumen on a somewhat ovate base. Cor. campanulate, nearly straight on the back, *purplish-brown.* Margin obtusely denticulate. Lobes of upper Lip porrect; of lower ovate, acuminate. **p.** *On Cineraria maritima.* I. of Hyères.

16. **Avellanæ.** Sep. touching or united in front, cloven and with a tooth in front. Segm. lanceolate, acute. Cor. tubuloso-campanulate. Margin somewhat denticulate, and fringed with glands. Lobes of upper Lip spreading. Fil. with a dense line of hairs. **p.** *On Corylus.* Prague. *Not noticed by Koch.*

17. **Alexandri.** Sep. undivided, ovate or ovato-lanceolate, acuminate. Cor. "*non constricta,*" Guss. Margin denticulate. Style hairy at base. Stigma somewhat glandular. *Scales ovato-lanceolate. Bracts ovato-lanceolate, shorter than corolla. Smell pleasant.* **a.** 4, 5. Sic. *Differs from* O. pruinosa *in the shape and entireness of the sepals, and in the shortness of the glandular hairs.*

†† *Filaments smooth at the base.*

18. **major.** Sep. contiguous or united in

front. Cor. broad campanulate, evenly arched on the back, bellying in front. Margin nearly entire. Lobes of lower Lip separated by an inflated protuberance; the lateral ones somewhat acute; (middle twice as large, Koch; *but I do not find it so.*) Stigma yellow. *Scape* 1 *to* 2 *feet, hollow. Spike long, not crowded. Bracts lanceolate, acuminate, exceeding flower.* **p.** 5–7. *On Cytisus scoparius. Babington says, "Sepals 2-nerved:" I find additional nerves, but feeble and crooked.*

19. **Satyrus.** Sep. cloven. Segm. linear, acuminate. Cor. *pale violet,* tubuloso-campanulate. Tube nearly smooth. Border very hirsute externally, crenulate. Lateral Lobes of lower Lip ovato-triangular, acute, somewhat folded, with a tooth on each side; middle Lobe larger, ovate, acute. Stamens with a furrow in front and glandular hairs at top. Stigma yellow. Lobes hemispherical. *Upper part of plant densely covered with long, curled, glanduliferous hairs. Scape* 9–12 *in., hollow. Lower Scales ovate; upper lanceolate. Bracts ovate with long acumen, far exceeding corolla, forming a tuft at the top of the dense spike.* **p.** 5. Polcevera near Genoa.

** *Style smooth.*

20. **densiflora.** Sep. or Segm. broadly ovate, with subulate acumen, sometimes with an additional tooth in front. Cor. *small,* campanulato-tubular, *pale yellow,* arched on the back. Margin crenate. Lobes of lower Lip separated by a broad gibbous sinus. Stamens smooth or with a few hairs at base. Stigma deeply divided, with 2 small, purple lobes. *Scape about* 10 *in. Lower Scales ovato-lanceolate; upper narrow lanceolate, acuminate, remote. Spike dense, cylindrical. Bracts lineari-subulate, exceeding flowers.* **p.** 5. Castel Sardo in Sard.

b. *Nerves of Sepals* 1–4.

21. **crinita.** Sep. few-nerved, deeply cloven, on an ovate base, united in front. Segm. triangular, acuminate. Cor. small. Tube (cylindrical, somewhat inflated, Bert.) spreading horizontally. Margin *dark blood-colour,* crenulate. Stamens hairy at base (smooth, Guss.). Style somewhat villous and glandular. Stigma purple. *Scape* 4–9 *in. Scales narrow lanceolate, adpressed; upper remote. Spike cylindrical, dense. Bracts lineari-lanceolate, acuminate (exceeding the unopened corolla,* Guss.). **p.** 4, 5. *On Lotus cytisoides.* Cors. Sard. Sic.

22. **nebrodensis.** Sep. cloven. Segm. triangulari-subulate. Cor. tubular. Margin finely denticulate. Lobes connivent. Stamens smooth. Style obsoletely villous. *Scales linear, acute, adpressed. Spike few-flowered. Bracts lanceolate, acuminate, far exceeding the small, blood-coloured, open flower.* **a.** 5. *Plant much more slender than* O. crinita, *and agreeing with the* O. sanguinea *of Presl.*

23. **concolor.** Sep. 1–3-nerved, with a subulate acumen, on an ovate base. Cor. *yellow,* tubuloso-campanulate, porrect, arched at base, afterwards straight. Margin obtusely denticulate, not ciliate. Upper Lip 2-lobed. Stamens hirsuto-ciliate below. Anthers small, nearly circular. Style nearly smooth. Stigma yellow. *Lobes of upper Lip at last revolute. Whole plant straw-colour.* Bracts equalling corolla. **p.** *On Scabiosa, Chærophyllum, and Mentha.*

24. **lucorum.** Sep. broadly ovate, 2-nerved, cloven. Cor. tubuloso-campanulate. Back curved. Margin somewhat denticulate, and finely fringed with glands. Lobes of upper Lip spreading. Stamens densely hirsute to above middle. Style smooth. Stigma velvety, *pale yellow or reddish-brown.* **p.** 6, 7. *On Berberis.* Munich. *Differs strikingly from* O. flava *in its reddish-yellow colour, broader and less curved Cor., and reddish-brown, deeply divided Stigma.*

25. **Klugii.** Sep. 2-nerved, cloven, on an oblongo-ovate base. Segm. with subulate acumen. Cor. tubular, slightly curved. Upper Lip emarginate, eroso-denticulate, at last erect. Lateral Div. of lower Lip acuminate, obsoletely trifid; middle larger, acutely denticulate, generally with an excurrent middle nerve. Stamens somewhat hairy. Style smooth. Stigma wax-colour. *Plant a purplish flesh-colour. Bracts exceeding flower. Spike long: upper part dense, comose. Cor. purplish on the back, pale in front, with darker lines.* **p.** *On Trifolium medium.* Bonn. *Not noticed by Koch.*

26. **rubra.** Sep. 1-nerved, undivided, lanceolato-subulate. Cor. campanulate, curved in the upper part. Upper Lip glandular on both sides, margin nearly entire; lower denticulate. Lobes somewhat separate. Stamens in pairs, connate at base, with a few hairs; upper part and Style somewhat glandular. Stigma pale red. *Scales and Bracts ovato-subulate.* **p.** 7, 8. *On Thymus Serpyllum.* Cornwall. Staffa. Antrim. *Joined by Koch to* O. Epithymum, *from which it differs in the Sepals, which are of much firmer substance, as well as being usually one-nerved; in the less expanded*

lower Lip ; and in the Fil. placed nearer the base of the tube, somewhat connate, and less hairy.

ii. *Stamens from about middle of tube of tubular corolla.*

a. *Sepals many-nerved.*

In all the plants of this section, except in O. glaberrima, *the Filaments appear to be more or less hairy at the base ; and if the Style is not said to be glandular, there is, however, no species in which it is said to be not so, except* O. laurina.

27. **Laserpitii.** Sep. on a broadly ovate base, fringed with glands. Cor. arched on the back, contracted at the insertion of the stamens, covered with jointed hairs, each on a bulbous base. Margin denticulate and ciliate. Upper Lip deeply 2-lobed; lower with ovate, retuse, mucronulate lobes. Fil. hirsute on their whole length. Disc of Stigma lemon-coloured. *Bracts with a long subulate acumen, on a triangular base. Glands of Hairs golden.* **p.** *Calc. rocks. On Laserpitium Siler.* Mt. Colombier, Dép. de l'Ain. Jura. Salève.

28. **fragrantissima.** Sep. cloven. Segm. lanceolate, acuminate. Cor. elongato-tubular, somewhat widening upwards. Margin crenulate. Upper Lip 2-lobed; *lobes of lower small. Fil.* 1 *or* $1\frac{1}{2}$ *line from base of tube.* Lobes of Stigma erect, yellow. *Scape hollow,* 8–12 *in. high. Scales narrow lanceolate, acuminate. Bracts lineari-lanceolate, somewhat shorter than corolla. Spike dense in upper part.* **p.** 5. *On Loteæ.* n. It. (*Very like* O. caryophyllacea. *Differs from* O. fragrans *by the position of its Fil. and the thickened points of its Anthers,* BERT.) *Scent agreeable and durable.* Notwithstanding the differences pointed out, I suspect that *caryophyllacea, fragrans,* and *fragrantissima,* form but one species.

29. **rubens.** Sep. or Segm. with subulate acumen on a broadly ovate base, touching or united in front. Cor. curved at base: back straight, bent down at top. Margin denticulate. Upper Lip with 2 spreading lobes. Stamens in curve of corolla, densely hairy to the middle. Stigma wax-coloured, without a border. *Bracts lanceolate, equalling corolla. Fl. downy, in a long spike, with the smell of a Convallaria, yellowish.* **p.** 5, 6. *On Medicago.* m. Eur. O. elatior *of Bert. seems rather to belong to this than to the following, if there be really any difference.*

30. **elatior.** Sep. touching or united in front, cloven or trifid, on a broadly ovate base. Segm. lanceolato-subulate. Cor. *large,* tubuloso-campanulate, curved on the back. Margin toothed and somewhat denticulate. Upper Lip somewhat lobed. Stamens lanceolate at base. Stigma wax-coloured. *Scape very thick. Scales lanceolate; lower ovate. Bracts with long subulate acumen, equalling flower.* **p.** 6, 7. *On Centaurea Scabiosa.*

31. **centaurina.** Cor. *rather large, yellowish white*: tube thick: margin crenulate. Fil. $1\frac{1}{2}$ or 2 lines from base, hirsute at base, smooth in the middle, with glandular hairs at top. Stigma purple. *Scape thick, a span high, hollow. Scales numerous, ovato-lanceolate, acuminate. Bracts ovato-lanceolate, acuminate, very hirsute. Spike long: upper part dense.* ("*Certainly not* O. elatior," BERT.) **a.** 5, 6. *On Centaurea paniculata: on the shore* at Massa.

32. **Kochii** (*stigmatodes,* KOCH). Sep. ovate, cloven. Segm. lanceolate. Cor. arched on the back. Margin eroso-denticulate. Lobes of upper Lip porrect; Div. of lower rounded oblong. Stamens villous to middle. Stigma violet. **p.** 7, 8. *On Centaurea Scabiosa, Anthericum ramosum, and other plants.* Gratz.

33. **decora.** Sep. lanceolato-subulate, nervoso-carinate, entire or slightly cloven. Cor. arched at base, thin, straight. Margin denticulate, fringed with glands. Lobes of upper Lip reflexed. Stigma large, deeply 2-lobed. *Scape flexuose, nearly hairless. Bracts lanceolate, striate, equalling corolla. Spike lax. Fl. large.* **p.** Sard.

34. **pubescens.** Sep. 2-nerved or obsoletely many-nerved. Cor. somewhat woolly, with white, jointed hairs, nearly straight on the back. Margin denticulate. Upper Lip entire. Stamens with woolly hairs to above the middle. Stigma with an even disc. *Upper part of Stem, Bracts, and Sep. covered with white, jointed, somewhat woolly hairs. Spike long and dense.* **p.** *On Compositæ and Ligusticum.* Marseilles.

35. **brachysepala** (or *Cervariæ*). Sep. separate, ovate, cloven, not exceeding half of tube of corolla. Cor. *purplish-yellow,* evenly arched on the back, curved for nearly its whole length. Margin toothed, not ciliate. Lobes of upper Lip revolute; middle lobe of lower largest, and terminating in a long acumen. Stigma yellow. **p.** 6. *On Peucedanum Cervaria.*—GODRON. *Whole plant of a waxy yellow. Bracts lanceolate, nearly equalling flowers. Differs from* buckiana *by the Corolla*

suddenly curved above the middle, the recurved Lobes of the upper Lip, and the Fil. placed higher in the tube.—Reuter.

36. **buekiana.** Sep. ovate, cloven. Segm. lanceolate. Cor. pale buff, suddenly curved on the back above the base. Margin denticulate; that of upper Lip porrect. Stamens hairy at the base. Style smooth, purple, and somewhat glandular at top. Stigma yellow. **p.** 6. *On Medicago sativa.* Frankf.-on-Oder, Pruss. Rhine.

37. **glaberrima.** Everywhere hairless. Sep. or Segm. linear, acuminate, somewhat exceeding tube of corolla. Sep. and Bracts fringed with a few sessile glands. Cor. *white,* curved on the back. Margin denticulate. Anthers small, minutely apiculate, *brick-red.* Stigma yellow. *Scape hollow. Spike lax. On Dianthus.* Naples.

38. **laurina.** Sep. cloven, acuminate, ciliate. Cor. smooth, *pale: nerves and back purplish.* Tube somewhat contracted upwards. Fil. a little above base of tube. Style quite smooth. Stigma purple. *Scape* 12 *to* 24 *in. Upper Scales remote. Bracts nearly smooth, very acuminate; lower often exceeding flower.* **a.** 5. *On Laurus nobilis.* Rome. *Differs from* O. minor *by its size, and the smoothness of its parts.*

39. **Yuccæ.** Lateral Nerves of Sep. obsolete. Sep. entire, or with a single tooth, ovate, with a narrow acumen. Cor. smooth, except a hairy line on the back. Margin crenulate. Lips small. Fil. 1 or 1½ line from base of tube. Style smooth or with the lower longitudinal line sprinkled with glands. Stigma purple. *Bracts ovate, acuminate or lanceolato-acuminate, on an ovate base.* **a.** 6. *On Yucca aloifolia.* Pisa. *Intermediate between* laurina *and* minor.

40. **macrosepala.** Sep. deeply cloven, on an ovate base, with long, subulate acumen. Cor. spreading nearly horizontally, somewhat arched on the back near the base, straight above. Margin denticulate. Middle Lobe of lower Lip longest. Stamens with scattered glandular hairs. Stigma dark purple. **p.** *On Peucedanum Cervaria.* Als. Hesse. *Closely resembles* O. minor.

41. **minor.** Sep. lanceolato-subulate, on an ovate base, or cloven, with setaceous segments. Cor. evenly arched. Tube cylindrical. Margin obtusely denticulate, wavy, veined. Lobes of upper Lip porrect. Fil. 1½ or 2 lines from base, with a few scattered hairs at base (villous, Guss.). Anthers nearly round, hardly awned. Stigma purple or lilac. (Lobes only just touching, Bab.) *Scape hollow.* Scales ovato-lanceolate, acuminate, remote. Bracts lanceolate, acuminate, *on an ovate base. Spike at last lax.* **a.** 5–7. *On Trifolium pratense, &c.*

b. *Sepals* 1–4-*nerved.*

42. **Hederæ.** Sep. 1-nerved, suddenly contracted into 1 or 2 subulate points. Cor. arched on the back. Margin wavy, denticulate, veined. Lobes of upper Lip porrect. Middle Lobe of lower longest. Fil. inserted near base of corolla, smooth, except a few hairs on lower part. Anthers ovate, prolonged, acute, conspicuously awned. Style smooth, except a few hairs on upper part. Lobes of Stigma combined for at least one-third of the circumference. *Bracts lanceolate, nerveless, nearly equalling corolla, dark violet, as well as the sepals.* **p.** 7. *On Ivy.* Br. Fr. Pdm. Sard.

43. **serotina.** Sep. ovate, acuminate. Lateral Nerves obscure. Cor. nearly regularly arched on the back, and there covered with wool-like hairs. Margin repando-dentate. Lower Lip wide, the middle div. scarcely emarginate. Stamens nearly smooth, inserted near base of corolla. Germ. nearly smooth. Style somewhat hairy, making an obtuse angle with the germen. Stigma thick, of a purplish-brown. *Colour of expanded Cor. a pale yellowish-purple, with purple veins.* **p.** 10. *On Beta campestris. Differs from* O. amethystea *in its laxer spikes, and shorter and less curved corolla.*

44. **amethystea.** Sep. 3–9-nerved, suddenly contracted into one or two subulate points, equalling or exceeding corolla. Cor. suddenly curved near the base, afterwards nearly straight; (the tube at first is often regularly curved, J. W.) Margin acutely denticulate, veined. Lobes of upper Lip porrect, sometimes subdivided. Div. of lower Lip separated by an inflated protuberance; lateral somewhat cloven; the middle twice as large, with 2–4 lobes. Stamens on curve of corolla, with scattered hairs at base. Stigma brown. *Scape purple. Scales oblongo-lanceolate, acuminate; the lower tiled. Bracts equalling or exceeding flowers. Cor. whitish or lilac, with purple veins.* **p.** 6, 7. *On Eryngium.* Fr. w. G.

45. **Picridis.** Sep. quite separate, 1-nerved, undivided, or 3-nerved, with a tooth in front; with a long acumen. Cor. *white or pale yellow, sometimes with purple stripes,* curved at top. Margin crenulate. Upper Lip entire, margin spreading. Fil. densely hairy to above the middle, warty above. Style quite hairless.

Stigma finely granular, red. *Plant villous with curled hairs. Scape flexuose,* 9–10 *in. Scales crowded, many-nerved, narrow lanceolate, acuminate. Spike dense* (20-40-*flowered,* Godr.). *Bracts narrow lanceolate, acuminate.* **a.** 6, 7. *On Picris hieracioides.* Norm. Metz. Palat. Sty. *Much more villous than* O. loricata *or* O. flava, *from which it is also distinguished by the entire upper lip. From* O. lucorum *it differs by the straight lower part of the back of the corolla.*

46. **loricata.** Sep. 3–5-nerved, bipartite. Segm. ovato-lanceolate, somewhat acuminate. Cor. straight on the back, curved at top. Margin obtusely denticulate. Upper Lip with spreading lobes. Stamens with a few glandular hairs at base, a little above base of tube. Stigma pale purple. *Scape slender,* 6–12 *in. Scales lanceolate, rather remote. Bracts shorter than corolla.* **p.** 5, 6. *On Artemisia campestris and Gnaphalium Stœchas.* Ger. Dau. Lyons. Savoy.

47. **flava.** Sep. 1-nerved or obsoletely 3-nerved. Cor. curved on back. Margin denticulate. Lobes of upper Lip closely reflected. Stamens densely hairy to above middle. Style smooth. Disc of Stigma waxy, with warty scars. *The Lobes of the upper Lip are so closely reflected as to touch each other. Whole plant of a waxy or pale yellow.* **p.** 7. *On Tussilago nivea, Peucedanum Cervaria, and other plants.* Munich. Gratz.

48. **australis.** Sep. few-nerved, deeply cloven, on an ovate base. Segm. lineari-subulate, diverging. Cor. *small,* curved on the back, nearly straight at top, *yellow.* Lips *small,* denticulate: Lobes of the upper reflexed: middle Div. of lower somewhat truncate. Tube hairy within. Fil. 1 line from base of tube, somewhat hairy below. Stigma transversely furrowed, yellow. *Scape* 2 *feet or more. Scales narrow lanceolate, acuminate. Bracts lineari-lanceolate, acuminate, equalling or exceeding corolla. Spike very long. Fl. crowded.* **p.** 5, 6. Sard. *Differs from* O. Hederæ *in the deeply divided sepals and spreading segments, and in the much longer and nerved bracts.*

49. **cernua.** Sep. ovate, few-nerved. Cor. blue, strongly curved, and somewhat contracted in the middle. Lips *small,* subrepando-crenate, not ciliate. Lobes of upper porrect. Stamens smooth. Anthers *small,* hardly awned. Style smooth. Stigma "velutino-granular." Lobes separated by a hollow. **p.** *Sandy hills. On Artemisia campestris.* Montp. Gap.

50. **Salviæ.** Sep. 1-nerved, cloven. Cor. curved on the back. Margin denticulate, somewhat ciliate. Lobes of upper Lip porrect. Fil. hairy to above middle, sprinkled at top with glanduliferous hairs. Stigma velvety, dark waxy-yellow. **p.** 6, 7. *On Salvia glutinosa,* Carn. Pdm. *On Valeriana officinalis,* Pyr. *Differs from* O. lucorum *in the* 1-*nerved sepals, copiously denticulate corolla, porrect segments of upper Lip, and yellow stigma. It resembles* O. flava *in colour.*

Nerves of Sepals not described.

51. **Crithmi.** Sep. cloven. Segm. lineari-lanceolate, acuminate, pubescent. Cor. slightly curved: upper Lip entire. Fil. about 1 line from base of tube, with yellow glands at base, hirsute to above the middle. Stigma reddish. *Bulb with few scales. Spike lax. Bracts ovato-lanceolate, pubescent, reddish-purple.* **p.** 5, 6. *On Crithmum maritimum.* w. Lig. (*Allied to* O. pubescens, Reut.)

52. **Vitalbæ.** Sep. cloven. Segm. keeled, with a long slender acumen. Cor. white, hirsute externally. Margin crenulate. Upper Lip broad, spreading, emarginate; middle Div. of lower largest. Fil. about 1½ line from base of tube, dilated at base, hairy to above middle. Lobes of Stigma broad, purple, papillose. *Root of numerous fibres. Scape hollow. Scales remote: lower broadly ovate; upper lanceolate. Spike long, dense, comose. Bracts lanceolate, with long slender acumen, nearly equalling corolla. Hairs grey, jointed, glanduliferous.* **p.** 6. *On Clematis Vitalba.* Tusc.

53. **canescens.** Sep. or Segm. linear, with long setaceous acumen. Cor. denticulate. Upper Lip emarginate; middle Div. of lower largest. Stamens villous at base. Stigma yellow. *Scape hollow,* 1–2 *feet high. Scales crowded below, ovato-lanceolate, scattered above, lanceolate. Spike dense: lower Fl. sometimes stalked. Bracts lanceolate, acuminate, nearly equalling corolla.* Cor. (flesh-coloured, with red veins, Guss.) (white or pale yellow, Bert.) **a.** 4, 5. *On Compositæ.* Sic.

54. **littorea.** Sep. entire, or with a single tooth at base, ovate, with long lanceolate acumen exceeding bract. Cor. nearly straight, crenulate: the upper Lip emarginate. Fil. a little above base of corolla, villous at base. Style quite smooth. Stigma purple. *Scape* 2–6 *in. Scales and Bracts lanceolate, acute. Spike dense, short.* **a.** 4, 5. *Sandy shores. On Compositæ.* Sic.

55. **denudata.** Sep. entire, lineari-lanceo-

late, with long, slender acumen, about equalling bracts. Cor. *yellow,* with a thick short tube curved only at top. Lobes of Lips nearly equal. Stamens 1½ or 2 lines from base of tube, much widened at base, sprinkled with glandular hairs for their whole length. Stigma yellow. *Whole plant yellowish. Scape about* 18 *in.: upper part almost naked. Scales and Bracts lanceolate, acuminate.* **p.** 6. Belvi in Sardinia.

56. **bicolor.** Sep. scariose, equalling the short, ovate, acute bracts. Cor. evenly curved, narrowed at the neck. *Tube white. Throat and Lips yellowish.* Lips nearly equal: upper emarginate. Mouth flat and nearly entire. Fil. 1½ or 2 lines from base of tube, quite smooth (somewhat villous at base, Guss.). Style quite smooth. Lobes of Stigma depressed, yellow. *Scape* 6–12 *in. Scales short, ovate, acute. Bracts shorter than tube of corolla.* **a.** 4, 5. *On Leguminosæ: rare.* Isl. of Panaria. Sic. *According to Guss., the corolla is blue and hairless, and the plant in appearance resembles* O. ramosa.

57. **cærulescens.** *Fl. small, blue.* Tube of Cor. ovate below, contracted above germen. Div. of lower Lip concave. Fil. inserted above middle of tube, somewhat hairy at base. *Spikes woolly.* **a.** 5, 6. *On Artemisia campestris.* Ratisb. Dantzig.

58. **fragrans.** Cor. gradually enlarged upwards, curved on back. Stamens inserted in middle of tube, hairy below, smooth at top. *Spike woolly. Plant fragrant even when dry.* **p.** ? 6 ? lower Aust.

Besides these we find in the 'Prodromus,' in this division of the genus, the following, considered as doubtful:—

bracteata, Viv., referred by Bert. to *O. canescens.*

59. **rigens,** Lois. "Stem hairless. Scales lanceolate, imbricate, stiff. Stamens naked in the lower part. Style quite smooth. Lobes of Stigma distant. *Very like* O. major, *but differing in the thick and somewhat pungent scales, and the want of hairs in every part except the bracts, which are slightly pubescent.* **p.** Cors."

sanguinea, Presl.; which seems to be the same as *nebrodensis.*

platystigma, Rchb.; which it is impossible to identify.

60. **nudiflora,** Wallr. "Scape (nearly equal?) Scales and Bracts ovate, slightly hairy. Sep. ovato-oblong, ending in two, linear, nearly equal teeth. Cor. somewhat campanulate, bellying, quite smooth. Upper Lip rounded, emarginate, crenulate. Lateral Div. of lower Lip somewhat rhomboid, shorter than the ovate, porrect middle one. Stamens and Style quite smooth. Stigma emarginate. *On Prunus spinosa.*—Laus." *Not noticed by Koch or Gaud.*

B. *Bracts* 3. *Calyx of* 1 *sepal.*

i. *Scape simple.*

61. **cæsia.** Cal. with 4 lanceolate, acuminate teeth, not longer than back of cup (acute, not acuminate, Guss.). Cor. *pale blue,* funnel-shaped, contracted above the germen. Margin ciliate. Stamens hairy at base. Anthers hairless (somewhat villous, Guss.). Lobes of Stigma semicircular. *Scape* 3–4 *in. Scales ovato-triangular* (*ovato-lanceolate,* Guss.). *Fl. in a dense spike, downy externally.* **p.** 5, 6. *On Artemisia campestris.* Bagnols, Mars. Madonie.

62. **olbiensis.** Cal. with 4 lanceolate, nearly nerveless teeth, nearly twice as long as tube. Cor. nearly hairless, a little contracted above the germen. Lobes strongly and unequally dentate. Stamens more than one-third from base of tube. Fil. hairless. Stigma nearly entire. Style nearly smooth. **p.** ? 5. *On Lavandula Stœchas.* I. of Hyères.

63. **stricta.** Cal. deeply 4-cleft (with a fifth shorter and very narrow tooth, Bert.). Segm. subulato-setaceous, two to four times as long as back of cup. Cor. *blue,* arched on the back, funnel-shaped, somewhat narrowed above base. Upper Lip deeply 2-lobed (emarginate, Bert.). Div. of lower Lip ovate. Fil. smooth. Style everywhere glandular. Stigma 2-lobed, yellow. *Scape* 6–12 *in., somewhat flexuose. Scales and Bracts triangulari-subulate. Inner Bracts linear, finely acuminate.* (Fil. on or above middle of tube, hairy at base, Bert.)

64. **cærulea.** Cal. with 5 lanceolate, acute teeth (fifth tooth short, triangular, Bert.). Div. of Lips oblong, eroso-crenulate, acute, ✓ flat. Fil. 1½ line from base, hairless or slightly pubescent at base. Anthers nearly hairless. Stigma at first capitate, yellow (whitish, with spreading lobes, Bert.). **p.** 6, 7. *On Achillea Millefolium. Not in Sic. Scape* 9–18 *in. Scales and Bracts lanceolate, violet; upper very remote. Spike lax below. Fl. large, amethystine. Two small Lobes sometimes occur between the lobes of the upper lip.*

65. **arenaria.** Cal. with 5 subulate teeth. ✓

Cor. nearly straight, contracted in the middle. Throat somewhat inflated. Div. of Lips obtuse. Margin ciliate. Suture of Anthers with long, wool-like hairs. **p.** 7, 8. *On Artemisia campestris.* Fr. G. Vall. Pdm.?

ii. *Scape generally branched.*

66. **lavandulacea.** Teeth of Cal. 5, subulate, acuminate, on an ovate base, much shorter than tube of corolla. Tube of Cor. *whitish,* narrowed in the middle. Lips purplish with blue veins. Margin denticulate, ciliate. Lobes small: those of lower Lip separated by 2, white, villous folds. (Fil. smooth, Guss.) Anthers woolly on the suture. Stigma whitish. **p.** 4, 5. *On Triticum, Pteris, Thapsia, Scorpiurus, Acanthus. Scape about* 9 *in. Scales small, lanceolate, remote; lower ovate. Inner Bracts lineari-lanceolate.*

67. **robusta.** Cal. 5-cleft: one Segm. very small, the others lineari-lanceolate, finely acuminate. Cor. curved. Throat shortly villous within. Lobes of upper Lip of Cor. reflexed; of lower hardly crenulate. Fil. quite smooth. Anthers surrounded with wool. Style quite smooth. Stigma of 2, straw-coloured globes. *Scape* 2 *feet or more, hairless below, villous immediately under the spike. Scales oval, obtuse; upper narrower, acuminate.* **p.** *On Artemisia campestris.* Potsdam. *Not noticed by Koch.*

68. **ramosa.** Teeth of Cal. 4, subulate, acuminate, or triangular, with setaceous acumen. Cor. slightly funnel-shaped, contracted above germen. Upper Lip 2-lobed. Margin revolute. Stamens nearly smooth (hairy in their whole length, Bert.). Anthers smooth or somewhat ciliate. Style nearly smooth. Stigma 2-lobed, whitish, minutely papillose. Root of numerous fibres. Scape flexuose, 3–9 in. Scales and Bracts short, ovate (lanceolate, acuminate, Bert.). **a.** 4–6. *On Cannabis, Nicotiana, Solanum, Trifolium, Compositæ, Cruciferæ, and Mesembryanthemum. Fl. very much smaller than in* O. cærulea.

69. **Muteli.** Div. of Cal. 4, lanceolate, acute or acuminate. Cor. somewhat funnel-shaped, contracted above the germen. Throat inflated. Back curved near the top. Div. of Lips ovate, ciliate: villous folds between those of lower lip. Style smooth. *Spikes short and dense, which, with the shape of the corolla, distinguish it from* O. ramosa. **a.** *On Calendula, Anthyllis, Rumex, Erodium, &c. Sandy shores.* Nap. Hyères. Toulon. Nice.

In this latter division the Calyx is an oblique cup, on which are placed 4 Teeth, or rather Divisions, so as to leave a space in front, where we find in some instances a small and ill-defined additional tooth; or there are 5 nearly equal teeth; but I have not met with this often enough to be assured of its constancy. The Anthers rise from a thickened ring.

The plants I have with a simple Scape are—

1. **stricta.** Gathered at Hyères. It has a long dense spike of 30–40 flowers. Bracts subulate: inner narrow linear, finely acuminate. Div. of Cal. lanceolato-subulate, finely acuminate, 2–3 times as long as tube, and nearly equalling corolla.

2. **arenaria,** Coss. Div. of Cal. 4. Bracts subulate, on an ovate base; inner linear, acuminate. Cor. larger and more inflated than in *O. cærulea.*

3. **arenaria,** Noe. From Constantinople. A smaller plant, and approaching *cærulea,* but remarkable by a blunt Tooth on each inner Bract.

4. **cærulea.** Div. of Cal. 4, subulate, finely acuminate, about as long as back of cup or a little longer. There is often a short additional triangular Tooth in front. Inner Bracts lineari-setaceous, nearly as long as outer. Blois.

5. **cærulea**? From St. Pol de Léon. A much smaller plant, with a flexuose stem. Cup of Cal. less oblique. Div. 4, triangulari-subulate, not acuminate, shorter than back of cup.

And with a branched Scape—

6. **ramosa.** Div. of Cal. 4, finely acuminate, somewhat longer than back of cup. Outer Bracts ovate, prolonged, acute; inner lanceolato-setaceous. Length of Cor. about $\frac{1}{2}$ in. Ger.

7. **ramosa**? From Nice. Div. of Cal. with additional Tooth, acuminate, somewhat shorter than back of cup. Outer Bracts ovato-triangular; inner obovate, with fine acumen. Length of Cor. about $\frac{3}{4}$ in.

8. **ramosa**? Near Sorrento. Spike long and taper. Branches small. Div. of Cal. 5, somewhat shorter than back of cup. Outer Bract triangulari-subulate; inner lanceolate, finely acute. Length of Cor. about $\frac{7}{8}$ in.

These two are very much larger than is usual in O. ramosa, *of a different habit, and of a darker colour.*

615. LATHRÆA.

1. **clandestina.** Stem branched, subter-

ranean. Fl. erect, solitary. **p.** 5. w. France. Lucca.

✓ 2. **Squamaria.** Flowering-stem erect, simple. Fl. drooping, in a secund raceme. Lower Lip trifid. **p.** 4. *Moist woods, occ.*

LXXII. ACANTHACEÆ.

Seeds without albumen, often fixed to ascending cartilaginous stalks. In other respects like the *Scrophulariaceæ.*

616. ACANTHUS.

✓ 1. **mollis.** L. deeply inciso-pinnatifid. Seg. ovate, acute, with coarse, mucronate, but not spinescent teeth. Bracts broadly ovate. **p.** 5–7. *Coasts* of Mdt.

2. **longifolius.** L. pinnatipartite. Segm. oblong, sinuato-pinnatifid, and toothed. Teeth ending in short spines. Bracts oblongo-ovate. **p.** 7. On a small island near Pola.

3. **spinosissimus.** L. pinnatifid or bipinnatifid. Segm. narrow, and, as well as the Rachis, furnished with unequal, very acute, spinescent teeth. Terminal Segm. very long, entire, but the veins running out into spines. Cor. shorter than the upper Div. of the calyx, much smaller than in *A. spinosus.* **p.** 7. Apulia and Iapygia.—Bert. *Bentham says that the Fl. of* A. spinosus *are smaller than those of* A. spinosissimus.

LXXIII. VERBENACEÆ.

Corolla of 1 tubular petal, with an irregular border, inferior. Stamens 2; or 4, of which 2 longer. Style 1. Seeds 4, in a 2- or 4-celled capsule or berry.

617. VITEX.

✓ 1. **Agnus-castus.** L. 5–7, fingered. Lts. lanceolate, acuminate, quite entire. Spikes interrupted, terminal. **s.S.** 7, 8. *Coasts* of Mdt. *occ.*

618. VERBENA.

✓ 1. **officinalis.** Stem erect. L. oblong, attenuate, trifid, laciniate and crenate. Spikes filiform, panicled. **a.** 6–9. *Uncult.*

2. **supina.** Stem decumbent, much branched. L. bipinnatifid. Spikes filiform, solitary. **a.** *Barren.* Prov. Agosta in Sic.

619. ZAPANIA.

1. **repens.** Hairless, creeping. L. cuneiform; upper part toothed. Spikes short, conical. Bracts obtuse. **p.** 6–8. *Inundated sea-side pastures.* Sic. Sarzana. ✓

LXXIV. LABIATÆ.

Calyx of 1 sepal. Corolla ringent (in the *Menthoideæ* campanulate, and nearly regular). Stamens 4 (except in four genera, which have only 2). Fruit in 4 detached lobes, each with a single seed.—For the Tribes, see Didynamia Gymnospermia.

Tribe I. *OCYMOIDEÆ.*

620. LAVANDULA.

A. *Spike with a crown of L. (comose).*

✓ 1. **Stœchas.** L. oblongo-linear, entire, hoary. Spike crowded. Cal. exceeding tube of corolla. **s.S.** 2–5. *Stony hills.* s. Fr. It. Sic.

2. **dentata.** L. oblongo-linear, pinnato-dentate, pubescent. Spike lax. Cal. equalling tube of corolla. **s.S.** *Dry.* Monte Gargano. Sic. *Not in Bert. or Guss.* ✓

B. *Spike slender, not comose. Whorls 6–14-flowered. Branches naked at the upper part.*

3. **vera.** L. oblongo-linear, quite entire, hoary. Floral L. rhombeo-ovate, acuminate; upper falling short of calyces. Bracts nearly wanting. **s.S.** 7, 8. *Hills.* Malesherbes. Kreutznach. s. Alps. Coasts of Mdt.

β. *pyrenaica.* Lower Floral L. longer. Cal. with a more evident appendage. e. Pyr.

4. **Spica.** L. oblongo-lanceolate, somewhat spatulate. Spikes interrupted. Floral L. linear or lanceolate; upper falling short of calyces. Bracts lineari-subulate. **s.S.** 5–9. *Dry.* s. Fr. K. Nap. Sic.

C. *Flowers solitary, opposite. Calyx 13-nerved, somewhat 2-lipped.*

5. **multifida.** Stems leafy. L. bipinnatifid. Segm. somewhat cuneate, acute. Floral L. broadly cordate (ovate, Bert.), acuminate, villous, equalling calyx. Spike rather dense. **p.** 3–6. Capo delle Armi, Cal.

Tribe II. *MENTHOIDEÆ.*

621. ELSHOLTZIA.

1. **cristata.** L. stalked, elliptic. Floral L. subrotund, acuminate, ciliate. Spikes secund, panicled. **a.** 7, 8. *Fields.* n. G.

622. PRESLIA.

1. **cervina.** Prostrate. L. linear or lineari-lanceolate, obtuse, quite entire, dotted. Whorls many-flowered, distant, not terminal. **p.** 7, 8. *Muddy.* s. Fr.

623. MENTHA.

A. *Throat of Calyx naked.*

i. *L. sessile.*

a. *Whorls approximate, forming a terminal spike.*

1. **macrostachya.** L. broadly ovato-elliptic, obtuse, rugose, hoary above, downy beneath. Floral L. linear, with setaceous acumen. (Bracts bipartite, Guss.) **p.** 7–9. *Moist.* It. *common.*

2. **rotundifolia.** L. ovato-subrotund, crenate, rugose, hairy above, woolly beneath. Bracts ovato-lanceolate. Cal. hairy. **p.** 7, 8. *Moist meadows and banks.*

3. **sylvestris.** L. ovato-lanceolate, downy, white beneath. Cal. villoso-tomentose. **p.** 7, 8. *Moist banks and thickets.*

α. *incana,* Sole. L. covered with a white down on both sides.

β. *villosa,* Sole. L. white beneath, hairy and wrinkled above.

γ. *Rosani,* Ten. L. white beneath, nearly smooth above.

δ. *undulata,* Willd. L. curly.

4. **viridis.** L. ovato-lanceolate, unequally serrate, hairless. All floral L. bracteiform, about equalling flowers. **p.** 7, 8. Alsace. Ger. Pdm. Lig. Rome.

b. *All the Whorls remote.*

5. **pratensis.** L. ovato-lanceolate, serrate, nearly hairless. Floral L. similar to the others, about twice as long as flowers. Cal. campanulate, with hairy teeth: the Stalks smooth. **p.** 7, 8. *Wet.* Eng. *Distinguished from* M. rubra *by the sessile L.,* Benth.; *but in Sole's figure the lower L. are stalked, and they are described by him as subpetiolate.*

ii. *L. stalked.*

a. *Upper Whorls forming a terminal spike or head.*

6. **nepetoides.** "L. ovate, sessile, densely pubescent. Spike oblongo-cylindrical. Upper Bracts lineari-subulate. Teeth of Cal. lineari-setaceous, porrect in the fruit. **p.** 7, 8. *Ditches, banks of streams.*"—Koch. *Resembles* M. sylvestris, *except for the stalked L. Lejeune compares it to* Nepeta Cataria *in general appearance.*

7. **urticifolia.** "L. broadly ovate, elliptic, folded, hirsute, serrate. Whorls forming a spike: cymes of the lower condensed into stalked heads! Floral L. cuspidate, inciso-dentate. **p.** *Marshes.* Lucania." — Ten. *Put by Bentham with* M. sylvestris, *but Tenore mentions leaf-stalks. Bert. puts it with* hirsuta.

8. **aquatica.** Hairs reflexed. L. ovate, obtuse, serrate, hispid. Upper floral L. bracteiform. Upper Whorls forming a head, or blunt terminal spike. Base of Cal. and Stalks covered with reflexed hairs. **p.** 7, 8. *Wet.*

α. *hirsuta,* Smith. Upper Fl. in heads.

β. *verticillata.* Fl. in whorled spikes.

9. **suavis.** L. ovate, acute, serrate, softly downy or villous on both sides, pale or hoary beneath. Upper floral L. often small, lanceolate. Lower Whorls remote; upper forming a

cylindrical spike. **p.** Autumn. Avig. Rhine. Parma. *A variety of* M. piperita, *according to Koch; of* M. hirsuta, *according to Bert.*

10. **piperita.** L. ovato-oblong, acute, serrate, with rounded crenatures at base, nearly hairless. Spike lax, obtuse, interrupted at base. Base and Stalks of Cal. hairless. **p.** 8. *Wet.* Bath. Norfolk. Ober Baden. Ratisbon. Tyrol. *Not in Italy.*

11. **citrata.** L. broadly ovate, hairless. Whorls few; upper united in an oblong head. Stalks and Cal. hairless. **p.** 7, 8. *Wet.* Cheshire. n. Wales. Bedford. It.

b. *All the Whorls distinct, not essentially terminating the branch. L. all similar.*

12. **præcox.** Whole Plant hairless. L. elliptic ovate. Whorls many-flowered, bracteate. Cal. campanulate. **p.** 6. *Wet.*— Sole. M. arvensis θ *of Benth.*

13. **rubra.** Plant nearly hairless. Stem flexuose, weak, branched. L. ovate. Whorls numerous, stalked, many-flowered. Bracts linear, ciliate. Teeth alone of the cylindrical Cal. hairy. **p.** 9. *Wet.* M. arvensis δ *of Benth.*

14. **gracilis.** Stem and L. hairless, much branched. L. lanceolate. Whorls many-flowered. Bracts lanceolate. Cal. campanulate, villous. Stalks smooth. **p.** 8, 9. *Wet.* M. arvensis η *of Benth.*

✓ 15. **arvensis.** Stem and L. villous. L. ovate. Whorls remote, many-flowered. Bracts lanceolate-subulate. Cal. campanulate, villous. Stalks smooth. **p.** 6–9. *Fields.* M. arvensis ε *and* ζ *of Benth.*

✓ 16. **sativa.** L. villous, ovate. Whorls numerous, stalked, many-flowered. Cal. and Stalks hirsute. **p.** 8, 9. *Wet. According to Smith, the throat of the Cal. is sometimes hairy.*

B. *Calyx two-lipped. Throat villous within.*

✓ 17. **Pulegium.** Prostrate, much branched. L. stalked, ovate, green on both sides. Whorls all remote, globose, many-flowered. Cal. hispid. **p.** 7, 8. *Woods and marshy places, occasionally.*

18. **Requieni.** Small, creeping, quite smooth. Stems filiform. L. rounded, stalked. Whorls lax, few-flowered. **p.** 6, 7. *Moist mountains.* Cors. Sard.

Doubtful.

19. **angustifolia,** Host. Erect, rough L. lineari-lanceolate, flat, denticulate above the middle. Whorls approximate. Bracts lanceolate, ciliate. Flower-stalks hispid. Throat of Cal. hairy.—Benth.

624. LYCOPUS.

✓ 1. **europæus.** No rudiment of the upper Stamen. Cal. with 5 acute teeth. L. stalked, sometimes pinnatifid at base. Stem erect. Runners 0. **p.** 7, 8. *Wet banks.*

✓ 2. **exaltatus.** Rudiment of upper Stamen capitate. Cal. with 5 acute teeth. L. stalked, pinnatifid. Seeds equalling teeth of calyx. **p.** 7, 8. *Damp.* s. Fr. It. *Confluence of* Rhine and Maine. *Great pool at* Capricia in Isl. Veglia.

Tribe III. *MONARDEÆ.*

625. SALVIA.

A. Lower ends of the Connectives of the two Anthers turned upwards, and united together or approximate. Tube of Corolla with an internal ring.

- **i.** Calyx with 4 or 5 nearly equal teeth.
  - **a.** Teeth acute, hardly enlarged in the fruit. Sp. 1–3.
  - **b.** Teeth expanded at the end, especially in the fruit. Sp. 4.
- **ii.** Upper Lip of Calyx nearly entire. Sp. 5.

B. Lower ends of Connectives bent downwards, expanded at the extremity, and connate. No ring in Tube of Corolla.

- **i.** Upper Lip of Calyx truncate, with 3 small, equal, erect teeth. Sp. 6, 7.
- **ii.** Upper Lip of Calyx truncate. Teeth small, erect; the middle shortest. Sp. 8–10.
- **iii.** Upper Lip of Cal. with 3 very small connivent teeth.
  - **a.** Helmet falcate, compressed. Sp. 11–19.
  - **b.** Helmet concave, nearly straight. Sp. 20–25.

C. Lower ends of Connectives directed downwards, linear, connate. Both Lobes of the Style filiform. Sp. 26.

D. Lower ends of Connectives remote, toothlike. Sp. 27.

A. *Lower ends of the Connectives of the two Anthers turned upwards, and connate or approximate. Tube of Corolla with an internal ring.*

i. *Calyx with* 4 *or* 5 *nearly equal, acute teeth.*

a. *Teeth hardly enlarged in the fruit.*

1. **officinalis.** A hoary Shrub. L. entire, flat, rugose, oblongo-lanceolate. Floral L. ovate, prolonged, acute. Whorls few-flowered. Cal. membranous, striate, not viscid. Teeth acuminate, exceeding floral L. **s.S.** 6. *Rocky.* s. Fr. *occ.* Trieste. K. Nap.

2. **confusa.** L. generally interruptedly pinnate, rugose, white and woolly beneath. Terminal Lt. very large, attenuate; lateral Lts. rounded at base. Whorls many-flowered, racemose. Cal. villous, not viscid. s. Eur.? —Benth.

3. **triloba.** L. cordate, rugose, crenulate, white and woolly beneath, with 2 small Lts. or segments at base. Whorls 6–10-flowered, somewhat panicled. Cal. viscid. Div. acute. **w.** 4, 5. *Calc. hills.* Syracuse. Calab.

b. *Teeth expanded at the end, especially in the fruit.*

4. **canariensis.** L. hastato-triangular, undivided. Floral L. incurved. Cal. membranous, coloured. **s.S.** 4, 5. Palermo. *Escapes.*

ii. *Upper Lip of Calyx truncate, entire, or with* 3 *very short teeth.*

5. **glutinosa.** Lower L. cordato-sagittate; upper ovate, acuminate. Whorls distant, 6-flowered. Middle Div. of Label crenate. **p.** 7–9. *Shady hills.* **s.S.** Sw. s. and e. G. n. Italy.

B. *Barren part of Connective bent downwards, expanded at the extremity and connate. No Ring.*

i. *Upper Lip of Calyx truncate, with* 3 *small, equal, erect teeth.*

6. **Horminum.** L. oval-oblong, crenate, villous. Upper floral L. enlarged, membranous, coloured, flowerless. Whorls distant, 6-flowered. **a.** 5, 6. *Fields.* Rous. Nice. Apulia.

7. **viridis.** Lower L. oval-oblong, crenate, villous; upper somewhat cordate. Floral L. very broad, acute, gradually diminishing upwards. Cal. of Fr. often reflexed. **a.** 5, 6. *Barren hills.* Sic. K. Nap.

ii. *Upper Lip of Calyx truncate. Teeth small, erect; the middle shortest. Floral L. very broad, with a point.*

8. **argentea.** Stem brachiate. Lower L. broadly ovate, cuneate at base, eroso-sinuate, furnished with a loose white wool. Pan. much branched. Upper floral L. without flowers. **p.** 5, 6. *Hot dry.* Cal. Monte di Cammarata, Sicily.

β, candidissima. Stem erect, leafless. Sic.

9. **Æthiopis.** Lower L. elliptic; all inciso-dentate; upper cordato-amplexicaul, furnished with a loose, white, entangled wool. ✓ Pan. much branched, fertile to the end. Teeth of Cal. somewhat spinescent. **b.** 5, 6. *Dry uncult.* s. Fr. Pdm. Aust.

10. **Sclarea.** L. broad cordate, eroso-crenate, wrinkled, finely hoary. Floral L. rhombeo-ovate, ✓ very broad, acuminate, exceeding calyx. Rac. panicled. Div. of Cal. subspinoso-acuminate. **b.** 6. *Grassy hills.* Fr. Spa. Istr. Vall. It.

iii. *Upper Lip of Calyx with* 3 *very small, connivent teeth.*

a. *Helmet falcate, compressed.*

11. **garganica.** Plant everywhere covered with viscid hairs. L. cordato-oblong, scabrous, green on both sides, lower deeply sinuate. Rac. branched. Whorls 6-flowered. Cor. twice calyx. Stamens included. Upper Whorls caducous. **p.** 6–8. *Meadows.* Monte Gargano.

12. **viscosa.** Plant everywhere covered with viscid hairs. L. broad cordate, somewhat sinuate, eroso-crenate. Floral L. rounded, about half as long as calyx. Rac. branched. Cor. three times calyx. Stamens included. **p.** Euganean hills. *Not in Bert. Resembles* virgata, *but the L. are larger, and it is everywhere viscid.*

13. **austriaca.** L. broad cordate, eroso-dentate, nearly hairless above. Stem-L. few and small. Rac. not much branched. Whorls 6-flowered. Hairs of inflorescence glandular. Stamens very exsert. *Fl. yellow.* **p.** 5, 6. *Grassy hills.* Aust.

14. **pratensis.** Root fusiform. Lower L. cordato-oblong, unequally crenate, nearly hairless above; ✓ upper amplexicaul. Rac. nearly simple. Whorl nearly naked. Hairs of inflorescence glandular. Stamens hardly or not at all exsert. *Cor. purple,* three times calyx. **p.** 6, 7. *Grassy hills.*

15. **hæmatodes.** Branches of Root thickened. L. somewhat cordate, prolonged; the lower lobed, crenate, nearly hairless above. Stem-L. few. Hairs of Inflorescence glandular. Cor. three times calyx. Stamens included. **p.** 5. *Coasts.* s. It.

16. **sclareoides.** Cor. twice calyx. *Differs from* pratensis *only in the shorter Fl. Has the habit of* S. clandestina, *but the L. are different. Coasts* of Mdt.—Benth. *Bert. does not notice it. Query if same as* tiberina.

17. **virgata.** Root fusiform. L. cordato-oblong, scabrous, sublobato-crenate, nearly hairless above. Branches of Pan. many, rod-like. Floral L. cordate, amplexicaul, acuminate. Whorls 6-flowered. Hairs of Inflorescence glandular. **p.** 6, 7. Flor. Tiv. K. Nap. *Includes* S. pyrenaica, Linn.

18. **tiberina.** Branches of Root thickened. L. cordato-oblong, lobed, somewhat scabrous, nearly hairless above. Hairs without glands. Rac. nearly simple. Cor. twice calyx. Stamens included. **p.** 6, 7. *Dry banks.* w. of Rome.

19. **ceratophylloides.** L. inciso-pinnatifid. Segm. horizontal, acute, nearly hairless above, numerous. Rac. somewhat branched. Hairs of inflorescence glandular. All the Whorls fertile. Cor. twice calyx. **p.** 6, 7. *Dry hills.* Reggio. s. Sicily.

b. *Helmet concave, nearly straight.*

✓ 20. **clandestina.** L. ovato-oblong, inciso-dentate or pinnatifid. Segm. acute, nearly hairless above, villous beneath, very rugose. Hairs of Inflorescence glandular. Cor. twice calyx. Spike short and truncate. **p.** 5–8. *Grassy hills.* s. Fr. It. Istr.

β. multifida. L. deeply inciso-pinnatifid.

✓ 21. **verbenaca.** L. broadly cordato-oblong, lobed (not half-way to the midrib, Ben.), or angularly cuneate, nearly hairless above. Hairs of Inflorescence glandular. Cor. not much exceeding calyx. Spike lengthened. **p.** 5–8. *Dry banks.*

β. incisa. Lower L. deeply incise. *Not in G.*

22. **Bertolonii** (*scabrida,* Bert.). "L. ovato-oblong, exactly cordate (at base), somewhat lobed, unequally toothed, rough beneath, as is the Stem. Rac. branched. Bracts shorter than the calyx. Cor. very small: upper lip with glandular hairs. **p.** 5, 6. Lecco."—Bert.

23. **controversa.** L. lineari-oblong, divided more than half-way. Segm. oblongo-linear, obtuse, revolute, pubescent and green on both sides. Rac. branched. Hairs of Inflorescence glandular. Cor. hardly exceeding calyx. **p.** 4, again in Autumn. *Sandy.* It. *occ.*

24. **oblongata.** Lower L. oblongo-lanceolate, stalked, crenate, erect, lobed. Hairs without glands. Cal. very villous, bearded on margin. Cor. twice calyx. **p.** 5, 6. Lucania.—Bert. *Except in the want of glands, hardly distinguishable from* S. verbenaca; *but the plant is smaller, and the Fl. larger.*

25. **sylvestris.** L. undivided, oblongo-lanceolate, generally cordate at base, hairless above. Rac. long, straight, somewhat branched. Hairs without glands. **p.** 7, 8. *Grassy hills, vineyards.* s. Fr. s. G. ✓

C. *Ends of Connectives directed downwards, linear, connate. Both Lobes of the Style subulate or filiform.*

26. **hispanica.** L. ovate, acute at each end, stalked. Floral L. bracteiform, deciduous, as long as calyx. Whorls equal all round. Spikes terminal, tiled, 4-sided. **a.** 6, 7. *Olive-grounds.* Oneglia.

D. *Connectives remote: the lower end reduced to an acute, deflexed tooth.*

27. **verticillata.** L. ovato-cordate, lyrate, crenato-dentate, green. Whorl with 20 or 30 flowers, nearly naked. Div. of Cal. acuminate. Style resting on lower lip of corolla. **p.** 7. *Pastures.* m. and s. Eur. *occ.* s. G. *abundant.* ✓

626. ROSMARINUS.

1. **officinalis.** L. linear, sessile, entire, with revolute margin. Fl. in short axillary racemes. **s.S.** 4, 5. *Dry calc. hills.* Mdt. ✓

627. ZIZYPHORA.

1. **capitata.** L. ovato-lanceolate. Floral L. very broad, rhombeo-ovate, acuminate. Whorls collected into a subglobose, terminal head. Cal. hispid. **a.** 6. *Fields.* s. It. ✓

2. **tenuior.** L. lanceolate: all nearly similar. Whorls axillary, distinct. Cal. very hairy. Cor. not much exceeding calyx. **a.** Apulia. —Benth.

628. HORMINUM.

1. **pyrenaicum.** L. nearly all radical, stalked, ovate. Whorls distant, 6-flowered. Floral L. bract-like, shorter than calyx. **p.** 7, 8. *High pastures.* Pyr. Vall. s. Tyr. Carn. Mts. of Carrara. ✓

Tribe IV. *SATUREINEÆ.*

629. ORIGANUM.

1. **vulgare.** Erect, villous. L. stalked, ovate, obtuse, somewhat serrate, green on both sides. Spikes oblong, corymboso-panicled. Bracts ovate, coloured, without glandular dots on the inner side. **p.** 7, 8. *Bushy, on gravel or limestone.*

β. *creticum*, LINN. Fr. in long, somewhat prismatic spikes.

γ. *virens.* "L. ovato-oblong, obsoletely serrate, hairy when young. Bracts oval, acute, somewhat ciliate, otherwise hairless, exceeding the glandular calyx."—GUSS. 6, 7. Sicily.

2. **heracleoticum.** Nearly erect, glandular. L. somewhat stalked, broad ovate, obtuse, quite entire. Pan. of oblong, crowded spikes. Bracts ovate, acute, green, exceeding calyx (with glandular dots on both margins," KOCH). **p.** 6, 7. *Dry rough.* Trieste. Cal. O. hirtum *of Koch; but he describes the L. as shortly acuminate.*

630. MAJORANA.

1. **Onites.** Hirsute, erect. L. ovate, sessile, somewhat serrate. Spikes small, numerous, ovoid. **w.** 5–7. *Rocks and dry calc. hills.* Syr., Sponti, Sic.

631. SATUREJA.

A. *Bracts small or wanting.*

1. **hortensis.** Annual, erect, pubescent. Whorls subsecund; the lower remote, about 5-flowered. L. lineari-lanceolate, acute. **a.** 7–9. *Warm gravel.* s. Eur.

2. **montana.** Nearly smooth. L. oblongo-linear, acute. Lower sometimes spatulate, obtuse. Whorls lax, 6–10-flowered, secund, approximate, forming a raceme (or spike). (Bracts linear, BERT.) Div. of Lip of Cor. oblong, obtuse, nearly equal. **w.** 7–9. *Dry hills.* s. Europe.

3. **variegata.** Stem nearly terete, pubescent. L. lanceolate; the upper mucronate. Whorls about 6-flowered. Div. of lower Lip of Cor. retuse: the middle one subrotund, twice as broad as the others. **w.** 7, 8. *Warm.* Carn. adr. G.

4. **cuneifolia.** Scabro-hispid. L. oblongo-linear, acute. Whorls 6-flowered. Bracts obovate. Div. of lower Lip of Cor. oblong, crenate, nearly equal. **w.** 6–8. Manfredonia. Lecec. Cape Leucas.

5. **pygmæa.** Stem 4-edged, smooth. L. lanceolate, acuminate; the upper mucronate. Middle Div. of lower Lip wider than others, obcordate. **w.** 7, 8. *Rocky hills.* Carn. Fiume.

B. *Bracts conspicuous. Whorls many-flowered, forming a dense globe.*

6. **Thymbra.** Diffuse, hispid. L. oblongo-linear; lower often obovato-cuneate. All Whorls remote. **w.** 4, 5. *Rough hills.* Sard.

632. HYSSOPUS.

1. **officinalis.** Rac. one-sided. Intermediate Segm. of Cor. 2-lobed, entire. L. lineari-lanceolate. **w.** 7–10. m. and s. Eur. *occ. rare in* G.

633. THYMUS.

A. *Floral L. similar to the others.*

1. **vulgaris.** Stem ascending or erect. L. sessile, fascicled, lineari-lanceolate, acute. Margin revolute. Floral L. obtuse. Whorls lax, somewhat distant. **s.S.** 5, 6. *Dry rocky.* Mdt.

2. **Piperella.** Procumbent. Branches rigid, ascending. L. stalked, broadly ovate, thick, regularly nerved, without cilia. Margin somewhat revolute. **p.** 5, 6. *Marit. rocks.* Isl. of Maretimo.

3. **Herba-Barona.** Procumbent, hairless. Flowering-branches short, ascending. L. stalked, ovato-lanceolate; upper acute, somewhat ciliate. Veins inconspicuous. **w.** 6, 7. Corsica.

4. **Serpyllum.** Procumbent. L. somewhat stalked, ovate or oval, attenuate, obtuse, veiny. Margin and Stalk ciliate. **w.** 6. *Open dry. occ.*

β. *montanus.* L. larger and less rigid.

5. **angustifolius.** "Procumbent. Flowering-branches ascending. L. somewhat stalked, oblongo-linear, attenuate, veiny. Margin and Stalk ciliate. Cal. usually hairless. Teeth of upper Lip short, lanceolato-ovate; of lower subulate, ciliate. **w.** *Dry hills.* s. Eur."—BENTH. T. Zygis *of Linnæus, according to Benth.; but the name has been so variously applied, that it is better to drop it.*

6. **pannonicus.** "Procumbent. Flowering-branches ascending, villous. L. some-

what stalked, linear; or the lower oblong, attenuate, veiny. Margin and Stalks ciliate. Cal. villous. Teeth of upper Lip short, lanceolato-ovate; of lower subulate. **w.** 7, 8. *Dry hills.* s. G. n. It."—Bert. *These two are considered by Koch as varieties of* T. Serpyllum.

B. *Floral L. much broader than the rest, but nearly of same colour and substance.*

7. **striatus.** Procumbent. Flowering-branches ascending, downy. L. nearly sessile, linear, attenuate, rigid, smooth, ciliate. Floral L. broad cordate, striate, pubescent. Cal. pubescent, tiled into a crowded head. **w.** 5, 6. *Dry calc. hills.* s. It. Sic.

✓ 8. **capitatus.** Procumbent at base, much branched. Barren Branches somewhat spinescent. L. sessile, oblong or linear, flat. Floral L. ovate, ciliate, covering calyces. **w.** 7, 8. *Dry stony.* K. Nap. Sic. Sard.

C. *Floral L. large, membranous, coloured.*

9. **Cephalotus.** Erect, branched, hoary. L. sessile, linear, small, fascicled. Margin revolute. Floral L. ovate, acute, covering calyces. **w.** "*On the banks of the* Oreto near Palermo."—Ucria.

Tribe V. *MELISSINEÆ.*

634. MICROMERIA.

A. *Teeth of Calyx subulate, finely acute.*

i. *Upper L. oblong. Margin revolute.*

✓ 1. **juliana.** Branches rod-like, erect. Bracts nearly equalling sessile calyx. Fascicles of Fl. dense. Throat of Cal. naked. Lower L. sessile, ovate, obtuse. **w.** 7, 8. *Stony.* Rome. Nap. Sic.

2. **tenuifolia.** Branches slender. Root-L. elliptico-ovate; upper oblongo-linear. Floral L. equalling cymes. Bracts numerous, about half as long as nearly sessile calyx. **w.** 6, 7. *Calc. coasts.* s. It. Sic.

✓ 3. **græca.** Branches rod-like, erect. Lower L. sessile, ovate. Cymes (to extremity of Cal.) equalling floral L. Bracts falling short of calyx. Fascicles lax, stalked. Cal. nearly sessile. Throat villous. **w.** 6, 7. *Stony and rocks.* Mdt.

β. cosentina, Ten. L. narrower.

4. **nervosa.** Cal. villous with long, spreading hairs. All L. ovate, acute. Whorls many-flowered. Bracts about equalling pedicel. **s.S.** 5, 6. *Dry hills and rocks.* Sic. Gallipoli. Otranto.

5. **canescens.** "Stem slender, branched at base and at top. Lower L. ovate; upper lineari-lanceolate, acute. Stalks 2–7-flowered. Bracts equalling flower-stalks. Cal. very villous with soft, spreading hairs. *Dry calc. hills.* Sic."—Guss.

6. **microphylla.** "Nearly smooth. Branches slender, decumbent. L. small, ovate and oblong. Stalks 3–8-flowered, somewhat shorter than floral L. Bracts equalling flower-stalks. Cal. covered with adpressed hairs. **w.** 4, 5. *Dry hills.* Sic. Lecce."—Guss.

7. **thymoides.** "Tufted. Branches filiform, downy with deflexed hairs. L. revolute on margin, hardly nerved at back, midrib hairy. Lower L. ovate, others linear, narrowed at base, sessile, rather obtuse. Surface with adpressed hairs. Cymes axillary, stalked, naked: the lower 1–2-flowered, remote; uppermost crowded, somewhat secund, 3–4-flowered. Pedicels equalling the linear bracts, three times shorter than calyx. Cal. ovate, somewhat ventricose, 13-nerved. Throat hardly villous. Upper Teeth triangular, somewhat recurved; lower with spreading hairs. **w.** Near Oneglia. *Seems to differ from* M. microphylla *principally in the linear upper L.*"—Benth.

8. **approximata.** Procumbent. Branches diffuse, leafy. L. fascicled. Stem-L. oblongo-lanceolate. Cymes somewhat exceeding L. Cal. not longer than combined stalks. Bract equalling flower-stalk. **w.** 2–5 and in Autumn. Iapygia. Sic. and Isl.

ii. *All L. flat and broadly ovate.*

9. **Piperella.** Tube of Cal. pubescent. Branches diffuse. Fascicles lax, stalked, few-flowered. L. glabrous on both sides, broadly ovate, obtuse. Bract small, oblong. Throat of Cal. naked. **w.** 7, 8. *Mountains.* Pdm. Liguria.

10. **Pulegium.** "Herbaceous, ascending, pubescent. L. stalked, ovate, dentate, green on both sides. Rac. crowded, secund. Cymes somewhat dichotomous, few-flowered. Teeth of Cal. setaceous. Throat villous. **p.** Fiume. *Lowest L. subrotund; upper acute, and acutely dentate: all rugose, and rough with short hairs. Cal. cylindrical. Teeth longer than width of tube.*"—Benth.

B. *Teeth of Calyx as broad as long.*

11. **marifolia.** Hoary. L. ovate, nearly entire, white beneath. Rac. lax, many-flowered. Teeth of Cal. obtuse, nearly equal.

Throat villous. Cor. twice as long as calyx. **w.** s. Fr.?

12. **rupestris.** "Ascending, smooth or very finely hoary. L. stalked, ovate or oblong, obtuse, somewhat dentate. Floral L. gradually smaller. Rac. dense, leafy, branched, secund. Cymes on short stalks, with many crowded flowers. Cal. shortly tubular. Teeth nearly equal. Throat naked. Cor. three times as long as calyx. **w.** *at base.* 7, 8. *Rocky.* Carn. Carinthia. Istria. Floral L. shorter than flowers. Bracts minute. Cal. 13-nerved."—Bert.

635. CALAMINTHA.

A. *Calyx nearly equal at base.*

1. **grandiflora.** L. stalked, ovate, acute, coarsely dentate. Rac. lax, few-flowered. Throat of Cal. nearly naked, very open. Cor. more than twice calyx. 7, 8. *Shady hills.* m. and s. Europe.

2. **sylvatica.** L. ovate, sessile. Cymes 7-flowered, the lower falling short of L. Common Stalk about as long as primary partial stalk. Cor. about four times tube of calyx. Root sending out slender runners. **p.** 7, 8. *Woody.* m. and s. Eur.—Dr. Bromfield.

3. **officinalis.** L. ovate, obscurely crenate. Cymes 7-flowered, the lower falling short of L. Common Stalk not half as long as primary partial stalk. Root stout, woody. **p.** 7, 8. *Woody hills and hedges.*

4. **nepetoides.** L. ovate, serrate. Cymes 7-flowered, all exceeding L. Common Stalk about as long as primary partial stalk, and much longer than L. in upper cymes. Root slender, with runners. **p.** 8, 9. *Stony borders.* Dau. Prov.—Jordan.

5. **Nepeta.** L. subrotundo-ovate, crenate. Cymes typically 15-flowered, lower equalling L. Common Stalk about as long as primary partial stalk. Root stout, woody. **p.** 7, 8. *Warm banks.*

6. **glandulosa.** L. ovate, somewhat acute, coarsely serrate. Whorls forming a very lax, few-flowered, secund raceme. Cal. closed with hairs. Cor. hardly exceeding calyx. **p.** or **w.** 7, 8. Niolo in Cors.

7. **thymifolia.** Hoary. L. stalked, ovate, obtuse, entire or very obscurely crenate. Whorls forming a lax, secund raceme. Cal. closed with hairs. Lips very short. Cor. nearly twice calyx. **p.** *Rocks.* Carn. Idria? *Not noticed by Koch, whose* C. thymifolia *is* Micromeria rupestris.

B. *Calyx nearly sessile, gibbous at base. Throat villous.*

8. **graveolens.** Erect, villous. L. stalked, ovate, somewhat serrate. Floral L. similar, exceeding flowers. Whorls 6-flowered. Lips of Cal. incurved, as long as tube. Cor. nearly half as long again as calyx. **a.** 6, 7. Umbria. K. Naples.

9. **Acinos.** Pubescent. L. ovate, somewhat serrate, all similar. Floral L. exceeding flowers. Whorls 6-flowered, remote. Lips of Cal. shorter than tube. Cor. hardly exceeding calyx. **a.** 6–8. *Fields.*

10. **patavina.** Herbaceous, ascending, pubescent. L. stalked, ovate, acute, nearly smooth, veiny, all similar. Lips of Cal. shorter than tube. Cor. hardly twice calyx. **p.** Verona. Pdm. mdt. Fr. *Bentham quotes* C. acinoides *of Tenore, but the descriptions hardly agree, nor the habitats.* C. patavina *is, perhaps, a var. of* alpina. *Bert. pronounces it an imaginary plant.*

11. **acinoides.** "Woody, ascending. Stem villous with recurved hairs. Lower L. ovate, obtuse; upper lanceolate, acute, nearly entire, without dots, green on both sides. (Lips of Cal. shorter than tube.) Whorls 6-flowered. Fl. nearly sessile. Cor. twice calyx. **w.** 5, 6. Lucania. Lecce."—Ten.

12. **microphylla.** Woody, small. L. stalked, subrotund, quite entire, all similar. Lips of Cal. much shorter than tube. Cor. twice calyx. **w.** 7. Monte Coscione, Corsica. —Bert.

13. **alpina.** Diffuse, pubescent. L. stalked, ovate or subrotund, hardly serrate. Lips of Cal. shorter than tube. Cor. more than twice calyx. **p.** 6–8. *Shady mountains.* m. and s. Europe.

14. **rotundifolia.** "Stems tufted, diffuse, with spreading pubescence. L. roundish ovate, somewhat serrate, rather hairy. Whorls 4–10-flowered. Cal. villous, tubular. Cor. two to four times as long as calyx. Throat inflated. **b. p.** 5, 6. *Hill pastures.* Madonie, &c."—Guss.

636. CLINOPODIUM.

1. **vulgare.** Erect, villous. Whorls equal, many-flowered. Involucrum as long as calyx. **p.** 7, 8. *Hedges, &c.*

637. MELISSA.

1. **officinalis.** Erect, branched. L. some-

what cordate, all nearly similar. Whorls lax. Bracts few, ovate. **p.** 7, 8. *Woods and hedges.* Sty. adr. G. It.

β. altissima, Fl. Gr.; *villosa,* Benth.; *cordifolia,* Pers.

Tribe VI. *SCUTELLARINEÆ.*

638. SCUTELLARIA.

A. *Floral L. small, differing from the others.*

1. **alpina.** L. nearly sessile, ovate, serrato-crenate. Floral L. membranous. Spike oblong, 4-sided. **p.** 7, 8. w. Alps. Pyr. Calabria.

2. **Columnæ.** Erect, branched, downy. L. stalked, cordate, crenate. Floral L. ovate. Rac. long, lax, somewhat branched, secund. Cal. of Fr. very large, exceeding floral L. Cor. six times calyx. **p.** 5, 6. *Woody.* Paris. s. Fr. It.

3. **altissima.** Erect. Faces of Stem and upper surface of L. hairless. L. stalked, cordato-lanceolate. Floral L. ovate. Rac. long, lax, somewhat branched. Fl. opposite, secund. Cal. of Fr. very large, exceeding floral L. Cor. four times calyx. (*Corolla about* 7 *lines long, while in* S. Columnæ *it is* 11, Benth.) **p.** 5, 6. Umbria. Samnium. Abruzzi.

4. **Gussonii.** "Erect. Hairs of Stem and L.-stalk spreading. L. coarsely crenate: all cordate at base. Rac. long, hairy. Bracts ovato-oblong, attenuate at each end, exceeding calyx. Cor. 8–10 lines long. **p.** 6, 7. *Shade.* Sicily."—Guss.

5. **peregrina.** Procumbent. Branches nearly smooth. L. stalked, ovate, crenate, somewhat truncate at base. Floral L. stalked, ovato-oblong, attenuate, acute, quite entire, pubescent. Rac. long, lax. Fl. nearly sessile, opposite, secund. Cal. large, hairy. Cor. downy externally, 4 *or* 5 *lines in length.* **p.** 6, 7. Sicily.

B. *Floral L. like others, or only gradually smaller.*

6. **galericulata.** Branches spreading. L. on very short stalks, somewhat cordato-lanceolate, slightly serrate. Fl. axillary, secund, on short stalks. **p.** 7, 8. *Wet.*

7. **hastifolia.** Ascending, nearly simple. L. on short stalks, ovato-lanceolate, truncate at base, somewhat hastate. Margin entire. Fl. secund, somewhat racemose. Cor. long. Throat dilated. **p.** *Moist meadows.* Orléans. Angers. Ger. *scatt.* n. It.

8. **minor.** Hairless. L. on short stalks, cordato-lanceolate, somewhat hastate. Floral L. lanceolate, rounded at base: all obtuse. Fl. axillary, secund. Cor. nearly smooth. Throat hardly dilated. **p.** 7, 8. *Boggy meadows.*

639. PRUNELLA.

1. **hyssopifolia.** L. sessile, oblongo-lanceolate, quite entire, strigose. Lateral Teeth of upper Lip of Cal. lanceolate. *Open dry.* s. Fr. Pdm.

2. **grandiflora.** L. stalked, ovate, toothed or quite entire; *upper sometimes pinnatifid.* Lateral Teeth of upper Lip of Cal. lanceolate. Cor. large, more than twice as long as calyx. (Stamens pointless, Koch.) **p.** 7, 8. *Dry calc. hills.* s. and m. Eur.

3. **vulgaris.** L. stalked. Teeth of upper Lip of Cal. truncate, with a point. Cor. not twice calyx. (Longer Stamens with a straight spine-like tooth, Koch.) **p.** 6–8. *Grassy.*

α. L. oblong, entire or nearly entire.

β. pinnatifida. L. incise or pinnatifid.

γ. parviflora. Fl. hardly exceeding calyx.

4. **alba.** L. stalked. Teeth of upper Lip of Cal. ovate, acuminato-aristate. Stamens with a curved, spine-like tooth. Teeth of the lower Lip without internervous veins. L. sometimes divided. **p.** 7, 8. *Dry pastures.* Sw. Tyr. lower Aust.—Koch.

β. laciniata, Linn. L. pinnatifid.

640. CLEONIA.

1. **lusitanica.** L. deeply dentate, or semipinnatifid. *Has the appearance of* Prunella alba. Between Carcassone and *Sorricinium.*

Tribe VII. *NEPETEÆ.*

641. NEPETA.

A. *Outer Bracts equalling calyx. Upper Whorls collected into a terminal spike.*

1. **tuberosa.** L. cordato-lanceolate, crenate: lower stalked; upper sessile. Bracts ovate, reticulate, coloured. Teeth of Cal. equalling tube of corolla. **p.** 5, 6. *Dry fields.* Palermo, Pallavicino, Sponti, in Sic.

2. **foliosa.** Villous, viscid. Stem erect, woolly. L. subcordato-oblong, acutely serrate. Cymes shorter than L. Bracts linear. **p.** 5, 6. *Mountains.* Oliena, Sard.—Bert.

3. **Apulei.** L. cordato-lanceolate, crenate, sessile. Bracts oblongo-lanceolate, somewhat coloured. Teeth of Cal. as long as tube. Tube of Cor. very exsert. **p.** 4, 5. *Open clayey and calc. hills.* Sic.

B. *All Bracts falling very short of calyx. Upper Whorls racemose. Calyx curved. Mouth oblique.*

4. **agrestis.** The Stem very viscid. L. stalked, cordate or cordato-lanceolate, nervoso-rugose, green on both sides. Rac. long, interrupted, nearly simple. Cymes 5-flowered. Cor. more than twice calyx. Tube slightly exsert. **p.** 6–8. *Fields.* Monte d'Oro and Val di Niolo in Cors.

5. **Cataria.** L. cordate, acute, deeply crenate, hoary beneath. Rac. somewhat branched. Cymes many-flowered. Teeth of Cal. finely acute. **p.** 7. *Uncult.*

6. **Nepetella.** L. on short stalks, lanceolate, ovate or cordate at base, crenate, hoary on both sides. Rac. nearly simple. Cymes about 5-flowered. Teeth of Cal. acute. **p.** 7, 8. *Open.* Alpine valleys.

β. graveolens. Rac. short, dense.

C. *All Bracts falling short of calyx. Calyx nearly straight, with pungent teeth.*

7. **nuda.** L. hardly stalked, somewhat cordato-oblong, crenate, green on both sides. Rac. panicled, many-flowered. *Cal. of Fr. hardly* 2 *lines long.* Teeth equal. **p.** 7, 8. *Woody hills.* Dau. s. Eur.

β. violacea. Upper part of Stem and Tips of Cal. blue.

8. **latifolia.** L. sessile, somewhat cordate, crenate, green on both sides. Rac. long, many-flowered. Bracts lanceolato-subulate. *Cal. of Fr.* 3 *lines long.* Teeth straight, nearly equal. e. Pyr. *Certainly different from* N. nuda.—Benth.

642. GLECHOMA.

1. **hederacea.** Creeping. L. cordato-reniform, crenate, green on both sides. Teeth of Cal. about one-third of tube. Bracts very short. *Aromatic.* **p.** 4, 5. *Shade.*

2. **hirsuta.** L. cordate, crenate; lower reniform. Teeth of Cal. tapering into an awn, half as long again as the tube. **p.** 5, 6. *Woods and hedges.* Lower Aust. Sty.

643. DRACOCEPHALUM.

A. *Anthers smooth. Calyx 2-lipped.*

1. **moldavicum.** L. stalked, lanceolate, inciso-crenate. Whorls distant, forming a long raceme. Bracts lanceolate, aristato-serrate. **a.** 7, 8. *Cult.* Rabentisch in the Neumark. —Koch.

B. *Anthers villous. Whorls forming an interrupted Spike.*

2. **ruyschianum.** All L. undivided, lineari-lanceolate. Bracts ovato-lanceolate, quite entire, smooth. Upper Teeth of Cal. ovate. **p.** 7, 8. *Meadows.* Prov. Dau. Vall. s. Tyr. Pralugan in Pdm.

3. **austriacum.** Lower L. 3–5-cleft. Seg. linear. Margin revolute. Bracts 3–7-cleft. Upper Teeth of Cal. ovate. **p.** 5–8. *Stony slopes.* Pyr. Vall. e. G. Val Vinosta, s. Tyr.

Tribe VIII. *STACHYDEÆ.*

644. MELITTIS.

1. **Melissophyllum.** L. cordate; upper ovate. **p.** 5, 6. *Shade.*

645. GALEOPSIS.

1. **ochroleuca.** Stem downy with soft adpressed hairs, not thickened at joinings; upper oblongo-lanceolate, velvety on both sides. Cal. glanduloso-villous. (*Galea deeply notched,* Smith; *inciso-denticulate,* Koch; *entire,* Benth.) **a.** 7, 8. *Fields.*

2. **Ladanum.** Stem with soft adpressed hairs, not thickened at joinings. L. lanceolate or oblongo-lanceolate, downy on both sides. Cal. with adpressed hairs, without glands. (Galea somewhat emarginate, Sm.) **a.** 7–9. *Fields.*

3. **pubescens.** Stem with soft adpressed hairs, somewhat thickened and hispid at joinings. L. broadly ovate; lower somewhat cordate. Tube of Cor. exceeding calyx. Middle Div. of lower Lip nearly square, crenulate, flat. **a.** 7, 8. *Fields and uncult.* s. m. and c. G. —Koch.

4. **bifida.** Stem hispid, swelled at the joinings. L. oblongo-ovate, acuminate. Tube

of Cor. falling short of calyx. Middle Div. of lower Lip oblong, emarginate. Margin at last revolute. **a.** 7, 8. *Fields and uncult.* G.

5. **Tetrahit.** Stem bristly, swelled below the joinings. L. ovato-oblong, acuminate. Tube of Cor. not exceeding calyx. Middle Div. of lower Lip nearly square, crenulate, flat. **a.** 7, 8. *Fields.*

6. **versicolor.** Stem bristly, swelled below joinings. L. ovato-oblong, acuminate. Tube of Cor. twice calyx. (Middle Lobe of lower Lip heart-shaped, Sm.) **a.** 7, 8. *Sandy fields.* Br. n. G.

646. LAMIUM.

A. *Tube of Corolla straight.*

i. *Anthers smooth.*

1. **Orvala.** Tube of Cor. with a hairy transverse ring; lateral Div. without teeth. L. broadly cordate, crenate, rugose, somewhat villous. **p.** 5, 6. *Grassy thickets.* Pyr. Nantes. Istria. Mestre, Pdm. s. G.

ii. *Anthers hairy.*

2. **garganicum.** Tube of Cor. without a ring. Throat very large. Galea broadly obcordate. L. cordate, rugose, softly villous on both sides. **p.** 5, 6. Pdm. Garg. Luc.

3. **longiflorum.** Cor. three or four times calyx. Tube without a ring. Throat very large. Galea obcordate. L. cordate, somewhat rugose, nearly hairless. **p.** 6–8. Pyr. Mont Ventous. Pdm. Apenn.

4. **bifidum.** Throat large. Galea cloven: segments spreading. L. ovate, inciso-lobate; upper acuminate. **a.** 2–4. s. It. Cors. Sic. Sardinia.

5. **amplexicaule.** Tube of Cor. without ring. Galea oblong, entire. Border of Mouth toothless. Lower L. rounded, stalked; upper kidney-shaped, inciso-crenate, amplexicaul. **a.** 3–6. *Fields and uncult.*

6. **intermedium.** Tube of Cor. without ring. Galea oblong, entire. Lateral Lobes with a short tooth. Lower L. rounded, stalked; upper amplexicaul, inciso-crenate. Teeth of Cal. longer than tube. **a.** 3–10. *Cult.* Hamb. Oldenburg.

7. **incisum.** Tube of Cor. with hairy ring. Throat large. Galea oblong, entire. Lateral Lobes with a short, linear tooth. Whorls approximate at top of stem. L. inciso-dentate; upper ovate, on short stalks. **a.** 5. *Sandy fields.* Br. Fr. G.

8. **purpureum.** Tube of Cor. sometimes curved. Ring hairy. Throat large. Galea entire. Lateral Lobes with a short, linear tooth. Whorls approximate at top of stem. L. crenate: lower round; upper ovate. **a.** 4–6. *Cult. and uncult. Not in Sic.*

B. *Tube recurved, with a hairy ring. Anthers hirsute.*

9. **maculatum.** Tube of Cor. with a transverse stricture and ring. Galea oblong. Lateral Lobes with a long, subulate tooth. L. cordate, acute, strongly serrate, hairy. Fl. about 10 in a whorl. Tube of Cal. as long as teeth. **p.** 4, 5. *Uncult.*

β. lævigatum. Nearly hairless.

10. **album.** Galea oblong. Tube of Cor. with an oblique stricture and ring. Lateral Lobes with a lanceolate tooth. L. cordate, acute, strongly serrate, hairy. Fl. about 20 in a whorl. Tube of Cal. shorter than teeth. **p.** 5, 6, and 9. *Uncult.*

11. **tomentosum.** "L. ovato-cordate, rugose, very villous. Teeth of Cal. subulate, plumoso-ciliate. Tube of Cor. wide, somewhat recurved, furnished with a hairy ring. Throat somewhat dilated. Galea oblong. Lateral Div. with a long, subulate tooth. **p.** s. It."—Benth. *Not noticed by Bert.*

C. *Tube recurved. Ring oblique. Throat not much dilated. Anthers smooth.*

12. **pubescens.** Galea long, entire. Lateral Lobes angular, sometimes with a setaceous tooth. L. somewhat cordate, rugose, villous; upper acuminate. **w.** 4–6. Cal. Sic. *Cor. half as long again as in* L. flexuosum, *purple, and that and L. more villous.*

13. **flexuosum.** Galea long, entire. Lateral Lobes angular, sometimes with a setaceous tooth. L. somewhat cordate, acuminate, hardly hairy. Seeds with pale dots. **p.** 3–6. Rousillon. Nap. Sic.

647. GALEOBDOLON.

1. **luteum.** Galea long, entire, nearly as long as label. L. somewhat cordate, acuminate. *Fl. yellow.* **p.** 5. *Shade.*

648. LEONURUS.

1. **Cardiaca.** Lower L. palmate; upper

oblong, somewhat 3-cleft, attenuate. Tube of Cor. with an oblique ring. Galea nearly flat. **p.** 7, 8. *Uncult. occ.*

2. **Marrubiastrum.** L. oblongo-ovate, somewhat inciso-dentate, attenuate at each end. Tube of Cor. naked. Galea somewhat vaulted. **a.** 7, 8. *Uncult.* m. Eur. Metz. Lombardy.

649. STACHYS.

A. Outer Bracts extending at least to middle of calyx.
  i. Plant densely woolly. Sp. 1–3.
  ii. Plant hirsute with long, spreading hairs. Sp. 4, 5.
B. Bracts small. Flowers pink or purplish.
  i. Perennial. Stem erect, not branched at base. Sp. 6, 7.
  ii. Perennial. Stem branched at base. Sp. 8.
  iii. Annual. Stem weak, branched. Sp. 9–11.
C. Bracts small. Flowers yellowish.
  i. Annual. Sp. 12–14.
  ii. Perennial. Sp. 15–19.
D. Plant woody! Flowers axillary, solitary. Sp. 20.

A. *Outer Bracts at least reaching to middle of Calyx.*

i. *Plant densely woolly.*

1. **lanata.** Hairs densely matted, white. Lower L. elliptic; upper ovato-lanceolate. Uppermost floral L. shorter than cyme. Bracts lineari-lanceolate, equalling calyx. Teeth of Cal. pointless. Cor. woolly. Tube included. Whorls more than 30-flowered. **p.** 6, 7. Malesherbes.

2. **italica.** L. nearly sessile, oblong, rounded or cordate at base, crenulate. Floral L. quite entire, ovato-lanceolate, as long as cymes. Bracts lineari-lanceolate, equalling the somewhat incurved calyx. Teeth of Cal. acute, spinescent, densely woolly within. Cor. woolly. Tube included. Whorls 15–31-flowered. **p.** 7, 8. *Warm rough coasts.* It. Istr. Fiume.

3. **germanica.** Stem-L. stalked, cordate, prolonged. Upper floral L. lanceolate, acute, quite entire, exceeding Fl. Uppermost Whorls approximate. Bracts lineari-lanceolate, equalling somewhat incurved calyx. Teeth of Cal. acute, spinescent, woolly within. Cor. woolly. Tube included. **p.** 7, 8. *Calc. uncult.* m. and s. Europe.

ii. *Plant hirsute with long, spreading hairs.*

4. **alpina.** Lower L. stalked, cordate, prolonged. Floral L. gradually narrower, more attenuate and acute, serrate. All Whorls remote. Bracts linear, nearly equalling calyx. Teeth of Cal. acute, somewhat spinescent. Cor. woolly, twice as long as calyx. **p.** 7, 8. *Woody hills.* m. Eur.

5. **heraclea.** Lower L. stalked, oblong, somewhat cordate at base. Floral L. broadly ovate, acuminate. Bracts ovate or oblong; the outer equalling calyx. Teeth of Cal. finely acute, somewhat spinescent. **p.** 6, 7. *Barren hills.* It.

B. *Bracts minute. Flowers pink or purplish.*

i. *Perennial. Stem erect, simple or only branched in upper part.*

6. **sylvatica.** L. broad cordate, acuminate, on long stalks. Whorls distant, 6–8-flowered. Teeth of Cal. subulate, very acute, somewhat spinescent. Cor. nearly smooth, twice calyx. **p.** 7, 8. *Moist shady.*

7. **palustris.** L. rugose, nearly sessile, oblong, somewhat cordate. Whorls 6–12-flowered, forming a raceme or interrupted spike. Rachis and Cal. villous. **p.** 7, 8. *River banks and moist meadows.*

β. *ambigua.* L. more evidently stalked and more coarsely serrate.

ii. *Perennial. Stem branched from base.*

8. **arenaria.** Decumbent, hoary. L. nearly sessile, oblongo-linear or lanceolate, acute, with long attenuation at base. Margin entire. Upper floral L. falling short of calyces. Whorls 6-flowered. Teeth of Cal. finely acute, somewhat spinescent. **p.** 4, 5. *Sandy shores.* K. Nap. Sic.

iii. *Annual. Stem branched at base.*

9. **arvensis.** Lower L. stalked, ovate, somewhat prolonged. Uppermost sessile, attenuate. Whorls 4–6-flowered, distant. Cal. campanulate. Teeth acute, hardly spinescent. Cor. hardly exceeding calyx. **a.** 6–9. *Calc. and clayey fields.*

10. **marrubiifolia.** Nearly erect. L. broadly cordate, somewhat prolonged. Uppermost sessile, falling short of campanulate calyx. Whorls lax, 6-flowered. Cor. twice calyx. Teeth of Cal. lanceolate, acute, somewhat spinescent. **a.** 5, 6. *Fields.* Cors. Pausilippo.

11. **corsica.** Procumbent. L. subrotundo-ovate, lobato-crenate; the lower on long stalks.

Whorls 2–4-flowered, remote. Cor. three times calyx. Label very large. **a.** 5–7. *Fields.* Cors. Sard.

C. *Not woolly. Bracts minute. Corolla yellowish.*

i. *Annual.*

✓ 12. **annua.** Erect. L. stalked, ovate; upper lanceolate, acute, nearly entire. Whorls 6-flowered; upper approximate. Cal. tubuloso-campanulate, villous, somewhat curved. Teeth lanceolate, very acute. Cor. pubescent. Galea nearly entire. **a.** 7–9. *Cult. and uncult.* m. and s. Eur.

13. **spinulosa.** Lower L. stalked, cordate; upper ovato-lanceolate, sessile. Whorls distinct, 6–10-flowered. Cal. broadly campanulate. Teeth broad, acute, somewhat spinescent. Lower Lip of Cor. very large; upper nearly entire. **a.** Near Pola.—Rchb.

✓ 14. **hirta.** Branched, hairy. Lower L. stalked, cordate. Whorl 6-flowered. Teeth of Cal. very acute. Cor. about 1½ times calyx: upper Lip cloven. Tube included. **a.** 5, 6. *Dry rocky.* Bayonne. It.

ii. *Perennial.*

✓ 15. **maritima.** Branches short, ascending. L. on short stalks, oblongo-lanceolate, obtuse, attenuate. Upper Whorls approximate. Floral L. falling short of calyx. Cal. tubuloso-campanulate, villous. Teeth lanceolate, acute, pointless. Cor. 1½ times calyx. **p.** 6, 7. *Sandy shores.* s. Fr. Nice. Rochelle. adr. G. Italy.

16. **pubescens.** Ascending. Branches long, decumbent. L. stalked, ovate, attenuate, crenate. Whorls about 6-flowered, remote, forming a lengthened raceme. Floral L. generally exceeding calyx. Cal. tubuloso-campanulate, villous, somewhat curved. Teeth lanceolate, very acute. Cor. pubescent, twice calyx. **p.** 5. *Dry fields.* Luc. Cal.

✓ 17. **recta.** Ascending, hairy. L. oblong, crenate, on short stalks, rugose. Floral L. sessile, acute, falling short of calyx. Whorls 10-flowered, distant. Teeth of Cal. ovate, very acute, somewhat spinescent. **p.** 6–9. *Rough hills and thickets.* m. and s. Eur.

18. **labiosa.** "Pubescent. Stem decumbenti-ascending. Lower L. elliptic, obtuse; upper ovato-lanceolate, acuminate, sharply serrate. Cal. hirsute: Teeth lanceolate, longer than tube. Lower Lip of Cor. three times as wide as galea. **p.** 6–8. *Mountains* of Carr., of Picenum, of Tivoli."—Bert.

19. **subcrenata.** Ascending, hairy. L. nearly sessile, oblongo-lanceolate, attenuate, obtuse, nearly entire. Floral L. ovato-lanceolate, acute; uppermost falling short of calyx. Whorls dense, 6–10-flowered, distant. Teeth of Cal. ovate, very acute, somewhat spinescent. **p.** 7, 8. *Calc. mountains.* Carrara. Istria. Fiume.

D. *Woody! Flowers solitary in each axil.*

20. **glutinosa.** Glabrous, glutinous. Stem trichotomous, much branched. L. oblongo-linear, attenuate and acute. Teeth of Cal. ovate, very acute. Cor. silky externally. **s.S.** 5, 6. *Shores.* Capraria. Cors. Sard.

Not well known.

21. **barbigera.** "Hirsute, ascending. L. cordato-elliptic, crenulate. Floral L. ovate, acute, equalling calyx. Bracts ovato-linear. Whorls 6–10-flowered. Cal. regular, spinescent. Cor. woolly externally; "barbæ lacinia media obovata, lateralibus lineari-obtusis duplò longiora." Cors. *Resembles in appearance* S. lasiantha *of Guss.*"—Viv. *For* lasiantha *we should probably read* dasyanthes, *which belongs, according to Bertoloni and Bentham, to* S. germanica.

650. BETONICA.

✓ 1. **Alopecurus.** L. broadly cordate, hirsute. Cal. campanulate; upper part reticulato-venose. Tube of Cor. not exceeding calyx. Galea bifid. **p.** 7, 8. *Mountain pastures.* s. Europe.

✓ 2. **hirsuta.** L. stalked, cordato-oblong. Upper floral L. and Bracts ovato-lanceolate, mucronate. Cal. reticulato-venose. Tube of Cor. exceeding calyx. Galea entire or very slightly emarginate. **p.** 7, 8. *Mountain pastures.* Pyr. Alps. Apenn.

3. **officinalis.** Lower L. on long stalks, cordato-oblong, obtuse; upper remote: these and lower floral L. sessile, oblongo-lanceolate, acute, dentate. Cal. without veins. Galea nearly entire. Stamens short. **p.** 6–8. *Pastures and open woods.*

β. stricta. Larger and with broader L.

651. PHLOMIS.

A. *Middle Segment of Label much larger than others. Shrubs, more or less covered with white or brownish wool.*

✓ 1. **Lychnitis.** Floral L. dilated at base and embracing flowers! L. sessile, oblong; lower attenuate. Bracts subulate, silky. Teeth acuminate. **s.S.** 6. *Calc. rocky.* s. Fr.

2. **italica.** L. oblongo-lanceolate, obtuse, truncate at base. Whorls dense. Bracts linear, obtuse, approximate, equalling calyx. Cal. truncate, with short, unarmed teeth. **s.S.** It.?—Pers.

3. **lanata.** Branches divaricate. L. small, ovato-subrotund, white, and woolly beneath. Bracts ovato-lanceolate, not pointed, reaching to about middle of calyx, woolly. Teeth of Cal. short, obtuse, but sometimes with a rigid mucro. **s.S.** 6–9. Calabria.

4. **fruticosa.** L. ovate, prolonged or oblong, cottony beneath. Whorls many-flowered, dense. Bracts lanceolate or ovato-lanceolate, acute, ciliate, villous, sometimes pointed. Cal. villous. Teeth short, with a subulate acumen. **s.S.** 4–6. *Dry open hills.* Sic. Umbria. Calabria.

5. **ferruginea.** Floccose. L. oblongo-lanceolate, oblong, crenulate, cordate at base, very rugose. Bracts lineari-lanceolate, hispid. Mouth of Cal. with long hairs. Teeth short, with a subulate point. **s.S.** 5–9. Iapygia.

6. **Herba-Venti.** Herbaceous, erect. Branches numerous, divaricate, hairy. L. ovate, prolonged, serrate, coriaceous, shining above. Bracts lineari-subulate, rigid, somewhat pungent, ciliate, equalling calyx. Teeth of Cal. ending in a slender, subulate, spreading point. **p.** 6, 7. Umbria.

B. *Segments of Label nearly equal. Plant herbaceous.*

7. **tuberosa.** Nearly smooth. L. broad cordate, crenate. Floral L. oblongo-lanceolate. Bracts subulate. Upper Lip of Cor. nearly erect, very hairy within. **p.** 6, 7. *Woody.* Aust. Moravia.

652. BALLOTA.

1. **italica.** Tomentoso-villous. Stem erect. L. cordate, acute or cuspidate, unequally crenate. Whorls axillary, many-flowered. Teeth of Cal. spinescent, straight at top. Helmet 4-cleft. **p.** or **w.** 5–8. Umbria. Calab. Sic. —Bert.

2. **nigra.** Border of Cal. with 5 nearly erect, subulato-mucronate teeth. Bracts soft. L. ovate, truncate at base, green on both sides. **p.** 5–10. *Hedge banks, &c.*

β. ruderalis. Awns of Cal. longer than teeth.

3. **urticifolia.** "Slender. L. ovate, deeply and acutely serrate, *exactly resembling in shape those of* Urtica urens, *the earliest alone being cordate.* Teeth of Cal. erect, lineari-setaceous, as long as the tube. *Rubbish.* Sax. Boh."—Benth.

4. **frutescens.** Border of Cal. with 5–10 erect, somewhat spinous teeth. Bracts straight, spiniform. Upper Lip of Cor. very hirsute. **s.S.** 6, 7. *Rocky hills.* Pdm. Prov. Lig.

653. MOLUCCELLA.

1. **spinosa.** Border of Cal. narrow, coriaceous, somewhat 2-lipped, with 10 spines. **p.** or **a.** 5, 6. *Calc. rocks and stony.* Taormina. Messina.

654. MARRUBIUM.

A. *Calyx with* 5 *teeth.*

1. **Alysson.** Bracts nearly wanting. Cal. woolly, with 5 spreading teeth. Upper Lip of Cor. short, cloven. L. subrotund, cuneate at base, inciso-crenate or lobed, white, villous, soft on both sides. **p.** 4–7. Cal. Apulia.

2. **candidissimum.** Hoary, somewhat woolly. L. ovate, crenate. Whorls subglobose, many-flowered (20–50). Bracts subulate, at least half as long as calyx. Teeth of Cal. subulate, rigid, spreading. Upper Lip of Cor. oblong, cloven. **p.** 7, 8. *Rough uncult.* adr. G. Italy.

3. **peregrinum.** Branches divaricate. L. oblong, hoary. Whorls about 6-flowered. Cal. tomentose. Teeth and Bracts subulate. Galea oblong, cloven. **p.** 7, 8. *Uncult.* Aust.

B. *Lower Calyces with more than* 5 *teeth, but not all with* 10.

4. **pannonicum.** Branches divaricate. L. ovate or hoary. Floral L. twice as long as flowers. Whorls all distant, many-flowered. Teeth of Cal. subulate. Galea oblong, cloven. **p.** 7, 8. Aust. *Koch says that in the upper whorls the Calyces have only* 5 *Teeth, and considers it a var. of* M. peregrinum.

5. **radiatum.** Branches divaricate, hoary. L. ovate or oblong, soft, hoary; upper hardly exceeding calyx. Whorls somewhat lax, many-flowered; the upper approximate. Cal. small, tomentose. Teeth long, subulate, spreading in a star, spinescent. **p.** Port Juvenal.

C. *All Calyces with* 10 *hooked teeth.*

✓ 6. **vulgare.** Branches white, woolly. L. subrotund, ovate, villous. Whorls many-flowered. Cal. villous, with 10–12 teeth, subulate. Teeth each ending in a spine, which is generally hooked. Upper Lip of Cor. cloven to one-third of its length. **p.** 5–8. *Uncult.*

7. **Vaillantii.** L. cuneate, palmato-incise at top. Whorls many-flowered. Cal. with 15–20 teeth, each ending in a hooked spine. Upper Lip of Cor. cloven to above half its length. **p.** 7–9. *Uncult.* Etrechy.—Coss. and Ger.

655. SIDERITIS.

A. *Floral L. quite entire, somewhat membranous, embracing flowers.*

1. **sicula.** Woolly. L. attenuate. Floral L. cordate, acuminate, green, veiny. Teeth of Cal. very sharp. **w.** 6, 7. *Mountains.* It. Sicily.

2. **perfoliata.** Hispid, erect. L. cordato-amplexicaul. Floral L. very broad. Teeth of Cal. lanceolate, very acute. **w.** Sic.—Ucria. *Not found by Guss., nor mentioned by Bert.*

B. *Floral L. like Bracts, spinoso-dentate.*

✓ 3. **scordioides.** Upper Whorls collected into a terete spike. Stem-L. dentate, woolly, oblong, attenuate. Floral L. very broad. Whorls somewhat interrupted, spicate. **w.** 7, 8. *Warm open hills.* Jura. Prov. Sar.

✓ β. *hyssopifolia.* L. green and nearly hairless.

γ. *pyrenaica.* L. oblongo-linear, villous, hoary.

4. **hirsuta.** All the Whorls distant, globose, very villous. L. oblong, inciso-dentate. Floral L. very broad. **w.** 5, 6. s. Fr. Turbia, Monaco.

C. *Floral L. like others, but smaller. Plant annual.*

✓ 5. **romana.** Somewhat woolly. Teeth of Cal. spinescent; upper dilated, ovate. *Cor. yellow, without spot.* Whorls 6-flowered, distant. L. oblongo-ovate, dentate. Floral L. ovato-lanceolate. **a.** 6, 7. *Fields and vineyards.* s. Eur.

β. *approximata.* Less branched, more villous, and whorls more crowded.

✓ 6. **montana.** Cal. with spreading hairs: Teeth nearly equal. L. oblongo-lanceolate, attenuate. Floral L. awned, somewhat dentate. **a.** 7, 8. *Fields and vineyards.* s. Europe.

Not well known.

7. **tomentosa.** L. ovato-lanceolate, dentate. Fl. in whorled, leafy spikes. Sic.—Ucria. *Not seen by Guss., nor noticed by Bertoloni.*

Tribe IX. *PRASIEÆ.*

656. PRASIUM.

1. **majus.** Shrubby. L. ovato-lanceolate, somewhat cordate, dentate, smooth. **w.** 3–5. ✓ *Rocks and walls.* It. Osero.

Tribe X. *AJUGEÆ.*

657. TEUCRIUM.

A. Upper Teeth of Calyx dilated. Sp. 1–4.
B. Teeth of Calyx all nearly equal.
- **i.** Flowers forming a lengthened raceme.
  - **a.** All L. similar, undivided. Sp. 5–9.
  - **b.** All L. similar, tripartite, or pinnatifid. Sp. 10–12.
  - **c.** Upper Floral L. bract-like. Sp. 13–16.
- **ii.** Whorls crowded into a head. Sp. 17–20.

A. *Upper Teeth of Calyx dilated.*

1. **massiliense.** Herbaceous. Tube of Cor. straight, not exceeding calyx. L. ovate, obtuse, crenate; upper narrower, falling short of calyx. Teeth of Cal. spreading when in fruit. *Fl. purple.* **p.** 6, 7. Mars. Isl. of Hyères. Cors. Sard.

2. **Scorodonia.** Herbaceous. Tube of Cor. straight, exceeding teeth of calyx. L. ✓ ovate, obtuse, crenate; upper very small. Teeth of Cal. of Fr. spreading. *Fl. yellow.* **p.** 7, 8. *Thickets and heaths.*

3. **pseudo-scorodonia.** Somewhat shrubby. Tube of Cor. straight, included, or nearly so. L. ovate or cordate, crenate. Rac. nearly simple. Floral L. minute. *Fl. yellow.* **w.** s. It. *Not in Bert.*

4. **spinosum.** Tube of Corolla twisted. Branches spinescent. Whorls remote, 1–6-flowered. **p.** 6, 7. *Dry hills.* Apulia. Alcamo. Sardinia.

B. *Teeth of Calyx all nearly equal.*

i. *Flowers disposed in a lengthened raceme.*

a. *L. all similar, undivided.*

5. **Scordium.** Generally very villous. L. oblong, dentate, sessile. Fl. usually 2 or 3 together. Cal. campanulate. **p.** 7, 8. *Moist sandy. occ.*

6. **scordioides.** Generally woolly. L. cordato-oblong, sessile, crenate all round. Whorls usually 6-flowered. Cal. campanulate. **p.** 6, 7. *Wet coasts.* s. Fr. It. Sic. Monfalcone. Veglia. Osero.

7. **latifolium.** "Shrubby, erect. L. broadly rhombeo-ovate, cottony beneath. Fl. solitary. Div. of Cal. and of Cor. obtuse. **s.S.** 5, 6. Sic."—Bert.

8. **fruticans.** A Shrub. Fl. axillary, solitary, in short racemes. Div. of Cal. and Cor. acute. L. ovate or oblong, white beneath. **s.S.** 5, 6. *Calc. rocks.* w. It. and Isl.

9. **creticum.** A Shrub. Fl. nearly sessile; upper solitary, in long, straight racemes. L. linear, hoary beneath. **s.S.** 4, 5. Lopadusa.

b. *All L. similar, tripartite or pinnatifid.*

10. **campanulatum.** Herbaceous, procumbent, smooth. Fl.-stalks solitary, falling short of L. Cal. campanulate. L. flabellato-tripartite. Div. pinnatifid, with short, obtuse segments. **p.** 5–7. Apul. Lecce. Pal.

11. **Pseudo-chamæpitys.** Woody, hairy. Fruit-stalks solitary, generally exceeding the floral L. Cal. campanulate, very open. L. 3–5-partite. Segm. linear. Margin revolute. **w.** 5, 6. *Rocky.* Marseilles.

12. **Botrys.** L. trifid or pinnatifid; lower sometimes bipinnatifid. Whorls 4–6-flowered. Cal. gibbous at base, inflato-tubular. **a.** 6–9. *Dry fields.* m. and s. Eur.

c. *Upper Floral L. bract-like.*

13. **lucidum.** Herbaceous, hairless. L. stalked, ovate, inciso-dentate, crenate at base. Floral L. smaller, nearly entire. Whorls 4–6-flowered. Cal. tubuloso-campanulate. **p.** 7, 8. Pdm. w. Lig. above, Albenga.

14. **Chamædrys.** Woody, hairy, procumbent. L. stalked, crenate; lower oval, on an entire, cuneate base. **w.** 7–9. *Walls and rocks.*

15. **flavum.** Woody, downy, ascending. L. crenate; lower triangulari-cordate. Upper floral L. quite entire, ovate, acute. **w.** 7, 8. *Walls and stony.* Mdt.

16. **Marum.** Woody, hoary. L. small, ovate, cottony beneath, entire. Cal. tubuloso-campanulate, with short teeth. **w.** 6, 7. Gorgona. Capraria. Sard.

ii. *Whorls crowded into a head.*

17. **pyrenaicum.** Creeping, villous. L. roundish, crenate, green on both sides. **p.** 8, 9. Pyrenees.

18. **Polium.** Woody, tomentose, hoary. L. oblong, crenate, entire, and often cuneate at base. Margin revolute. *Fl. white.* **p.** 7, 8. *Dry.* Mdt.

- β. *flavicans* or *aureum.* L. broad oblong. Heads very hirsute. Branches yellow at top. *Fl. yellowish-white.*
- γ. *capitatum.* L. narrow oblong. Heads hoary, rarely becoming yellow. *Fl. pink or white. Bertoloni, who considers these as species, has not ventured to mark any distinctive characters.*

19. **montanum.** Woody, prostrate, downy. L. oblongo-linear, quite entire, hoary beneath. Whorls few. Teeth of Cal. acuminate.

- β. *supinum.* Teeth of Cal. mucronate. **w.** 6–8. *Calc. hills.* m. and s. Eur.

Not well known.

20. **euganeum.** L. cordato-oblong, crenate, stalked. Rac. simple, terminal, solitary, secund. Bracts stalked, cordate, acuminate, exceeding pedicel. Lower Teeth of Cal. exceeding the intermediate ones. Tube of Cor. villous. **p.** *Woody hills.* Padua.—Benth.

658. AJUGA.

A. *Whorls 6- or more flowered. L. undivided.*

i. *Suckers creeping.*

1. **reptans.** Nearly smooth. L. ovate or obovate, somewhat sinuate. (Lower Lip of Cor. 4-cleft, Sm.) **p.** 5. *Moist clayey.*

ii. *No Suckers.*

2. **orientalis.** Woolly. L. ovate, attenuate, coarsely sinuato-dentate. Floral L. sessile, dentate or inciso-lobate, exceeding flowers. Cor. resupinate: the Tube twisted. **p.** 3–6. *Dry pastures.* Cal. Sic.

3. **pyramidalis.** Hairy. Stem-L. obovate. Floral L. broadly ovate, embracing flowers, forming a 4-sided pyramid. Tube of Cor. straight, exsert, with an internal ring. **p.** 6. *Mountain pastures.*

✓ 4. **genevensis.** Somewhat hairy. Stem-L. somewhat elliptic, obtuse, attenuate. Floral L. ovate or cuneate, all generally dentate. Lower Whorls distant. Tube of Cor. straight, exsert. **p.** 7. *Grassy hills.*

5. **acaulis.** Stem very short. L. oblong, attenuate, hardly sinuato-dentate; all similar. Whorls few, crowded. Tube of Cor. straight, far exceeding calyx. **p.** 5–7. *High pastures.* Abr. Cal. Sic.

B. *Whorls 2-, rarely 4-flowered.*

✓ 6. **Iva.** Diffuse, hairy. L. coarsely dentate. Margin somewhat revolute; all similar. (Whorls sometimes 6-flowered.) *Fl. purple.* **p.** 4–9. *Dry cult.* Mdt.

β. *Pseudo-Iva.* *Fl. yellow.*

7. **chia.** Erect, hairy. L. trifid. Segm. linear, falling short of corolla. Whorls 2-flowered. **a.** 6. *Dry and open hills.* s. It. Sic. Istria.

8. **Chamæpitys.** Diffuse, hairy. L. trifid. Segm. linear. Whorls 2-flowered, much shorter than L. **a.** 4, 5. *Sandy or stony fields.* *Not in Sicily.*

LXXV. LENTIBULARIÆ.

Corolla 2-lipped, with a spur. Stamens 2, inserted in the base of the corolla. Ovary of 1 cell, with many seeds, fixed to a central placenta. Style 1.

659. PINGUICULA.

✓ 1. **vulgaris.** Spur subulate, shorter than border of veinless corolla. Segm. of Cor. oblongo-ovate, separate. *Fl. purple.* **p.** 6, 7. *Bogs.*

2. **grandiflora.** Spur nearly cylindrical, as long as veined margin of corolla. Segm. of Cor. broadly ovate, contiguous or even overlapping. *Fl. large, violet.* **p.** 5, 6. w. Irel. *Whether the original plant of Lamarck and that of Bert. are the same as this, is doubtful. I have Apennine specimens with a spur as long as border of corolla, and otherwise agreeing with the description of Bert.; but the Segm. of Cor. are separate, and the appearance of the Fl. is not like that of the Irish plant.*

β. *longifolia.* L. as long as scape. Pyr.

✓ 3. **alpina.** Spur conical, gibbous, ascending, shorter than corolla. Caps. acuminate. Scape hairless. **p.** 6. *Very high.* Sc. Alps. Pyrenees.

✓ 4. **lusitanica.** Spur cylindrical, obtuse, decurved, shorter than the nearly regular corolla. Caps. globose. Scape downy. **p.** 7. *Bogs.* w. Europe.

660. UTRICULARIA.

1. **vulgaris.** Spur conical. Upper Lip of Cor. about the length of the palate. L. pinnato-multifid. Bladders upon the L. *Fl. large (golden).* Anthers connate. **p.** 6–8. *Stagnant water.* ✓

2. **neglecta.** Spur conical. Upper Lip of Cor. nearly three times as long as palate. L. pinnato-multifid. Bladders on L. *Fl. not so long as in Sp.* 1. Anthers free. **p.** 7, 8. *Stagnant water.* Hamburg. Oldenburg.

3. **intermedia.** Spur conical. Upper Lip of Cor. twice as long as palate. Segm. of L. linear, dichotomous. Bladders separate from L. *Fl. paler, and with a longer lip than in Sp.* 1. **p.** 7, 8. *Stagnant water. rare.* ✓

4. **minor.** Spur very short, obtuse. Upper Lip as long as palate; lower ovate; the sides reflected. L. dichotomo-multifid. Bladders upon L. *Fl. small, pale yellow.* **p.** 6–8. *Bogs. occ.* ✓

5. **Bremii.** "Spur somewhat conical, very short. Upper Lip emarginate, as long as depressed palate; lower round, flat. L. dichotomo-multipartite. *Segm. setaceous, smooth. Fl. small, sulphur-coloured.* **p.** 8, 9. *Bogs and mossy pools. occ.*"—Koch. ✓

LXXVI. PRIMULACEÆ.

Corolla of 1 petal, regular, inferior. Ovary with one cell, and many seeds, attached to a central placenta. Style 1.

661. TRIENTALIS.

1. **europæa.** Cal. 7-partite. Cor. of 7 petals, united by a ring. L. crowded under flowers. **p.** 5–7. *Peaty woods and heaths.* Ard. Dau. c. and n. G. Sc. n. Eur.

662. LYSIMACHIA.

A. *Corolla rotate. Seeds many.*

i. *Flowers in a terminal raceme.*

1. **Ephemerum.** Stamens exsert. Div. of Cor. obovate, spreading. L. lineari-lanceolate, smooth, sessile. **p.** 7, 8. Mont Louis.

ii. *Flower-stalks axillary. Stems erect.*

2. **thyrsiflora.** Rac. stalked, thyrsoid, falling short of lanceolate L. Div. of Cor. with 5 small intermediate teeth! **p.** 6, 7. *Wet.* Eng. n. Fr. n. G. *occ.*

3. **vulgaris.** Erect. L. opposite and in whorls. Stalks subumbellate, many-flowered. Div. of Cor. nerved, and with a brown, resinous, marginal line! united at base. **p.** 6, 7. *Banks and marshy thickets.*

4. **ciliata.** L. opposite or in whorls, somewhat cordate, stalked, ciliate. Stalks 1-flowered, axillary, nodding, whorled or opposite. Div. of Cal. 3–5-nerved. Five short, intermediate, abortive stamens. **p.** 6, 7. *Marshes and ditches.* Spa. *naturalized.*

5. **punctata.** L. opposite or in whorls, ovato-lanceolate. Stalks 1-flowered; *the lowest sometimes 2- or 3-flowered.* Fil. united at base. **p.** 6–9. *Still water and moist banks.* c. G. It. *rare.*

iii. *Flower-stalks axillary, solitary, 1-flowered. Stem procumbent.*

6. **Nummularia.** Prostrate, creeping. L. opposite, cordato-subrotund. Fl.-stalks shorter than L. Segm. of Cor. cordate. **p.** 6, 7. *Wet banks.*

7. **nemorum.** Procumbent. L. opposite, ovate, acute. Fl.-stalks solitary, longer than L. Segm. of Cal. lineari-subulate. **p.** 6, 7. *Damp shade.*

B. *Corolla campanulate. Seeds 2 or 3, rugose, excavated at the umbilicus.*

8. **Linum-stellatum.** Erect, much branched. L. opposite, sessile, lanceolate, acuminate. Fl. axillary, solitary. Segm. of Cal. lanceolate, three times corolla. **a.** 5, 6. *Dry open.* s. Fr. s. G. n. It. Sic. Cors.

663. ANAGALLIS.

1. **arvensis.** Stem diffuse. L. sessile, ovate. Cor. ciliate, with minute glands. **a.** 6–9. *Cult. and uncult.* ✓

2. **cærulea.** Stem diffuse. L. sessile, ovate. Cor. crenulate, without glands. **a.** 6–9. *Fields. Common in* s. Europe; *more rare in* n. Europe. ✓

3. **collina.** Woody. Stem ascending or erect. Lower L. ovate; upper oblongo-lanceolate. Fl.-stalks far exceeding L., recurved when in fruit. *Cor. twice calyx, scarlet or blue.* **w.** 3–6. Isl. of San Petro near Sard. ✓

4. **tenella.** Stem creeping. L. opposite, roundish, stalked. Fl. axillary, 1-flowered, far exceeding L., *pink.* **a.** 6, 7. *Peat or sometimes moist sand. Rare in* G. *Not found in s. Italy.* ✓

5. **crassifolia.** Stem creeping. L. alternate, roundish, hardly stalked. Fl.-stalks shorter than L. **p.**? 6, 7. *Overflows.* Dax. ✓

664. CENTUNCULUS.

1. **minimus.** L. ovate, alternate. Fl. sessile. **a.** 6, 7. *Moist sandy.* ✓

665. CORIS.

1. **monspeliensis.** L. linear. Fl. in head-like racemes. **w.** 5, 6. mdt. Fr. ✓

666. ANDROSACE.

A. *Stalks 1-flowered. No Bracts.*
Aretia, Linn.

1. **helvetica.** Densely cushioned. L. closely imbricate, lanceolate, obtuse. Hairs simple, deflexed. Fl. terminal, nearly sessile. Segm. of Cal. somewhat acute (obtuse, Duby). Valves of ripe Caps. erect. **p.** 7, 8. *Very high rocks.* Alps. Pyr. ✓

2. **cylindrica.** Tufted. L. densely imbricate, lanceolato-ovate, very obtuse. Hairs

simple, deflexed when old. Fl.-stalks exceeding L. Segm. of Cal. lanceolate, acute. *Fl. white.* **p.** 8. *High calc. rocks.* Wood of St. Bertrand near la Oule du Marbori, Pyr.

3. **Heerii.** "L. densely imbricate, lanceolate, obtuse, with simple and forked spreading hairs. Fl. nearly sessile or stalked. Div. of Cal. exceeding tube of corolla, acute. **p.** 7, 8. *Snowy.* Opposite Martinsloch, Canton of Glarus."—Koch.

✓ 4. **pubescens.** Stems erect, crowded. L. closely approximate, forming rosettes, persistent, spatulate, ciliate. Hairs simple or rarely forked. Fl.-stalks shorter than L., not thickened upwards. Segm. of Cal. lanceolato-ovate, erect, acute. *Fl. white, with yellow centre.* **p.** 6, 7. *High stony.* Dau. Pays de Vaud.

✓ 5. **pyrenaica.** Tufted. L. imbricate, keeled, recurved, lineari-oblong, ciliate. Hairs simple. Fl.-stalks smooth, incurved, exceeding L. Segm. of Cal. obtuse. *Fl. white.* **p.** 9, 10. *Very high mossy rocks.* Seculejo, Averan, Pyr.

6. **ciliata.** "Stems lax. L. imbricate, lanceolato-oblong, smooth, ciliate with simple or forked hairs. Segm. of Cal. erect, lanceolato-linear, acute. Stalks incurved, rather long, thickened upwards. *Fl. pale violet.* **p.** *High.* Port d'Oo, Maladetta, Pyr."—Duby.

✓ 7. **imbricata.** Cushioned. L. densely imbricate, lanceolato-oblong, obtuse, covered, especially at the tip, with short branched and radiating hairs. Div. of Cal. acute (obtuse, Koch). Valves of Caps. at last spreading or reflexed. **p.** 6, 7. *Very high rocks.* Alps. Pyrenees.

✓ 8. **glacialis.** Tufted. L. approximate, forming rosettes, covered with a short stellate pubescence. (Fl.-stalks thickened upwards, Duby.) Segm. of Cal. lanceolato-linear, obtuse (acute, Koch). **p.** 7, 8. *High rocks.* Alps.

B. *Flowers in involucrate umbels. L. entire. Plant perennial.*

✓ 9. **villosa.** Stem proliferous, forming globular tufts. Plant covered with long, spreading, obscurely jointed hairs. L. lineari-oblong. Bracts lineari-lanceolate, acute, exceeding the unequal pedicels. **p.** 6–8. *High rocks.* Alps. Jura. Pyr. Mont Ventous. Apenn.

✓ 10. **Chamæjasme.** Stems tufted. Rosettes open. Plant covered with long, spreading, conspicuously jointed hairs. L. lanceolate, acute, attenuate. Bracts lanceolato-ovate, somewhat obtuse, about equalling Fl.-stalk. Segm. of Cal. acute. **p.** 6–8. *High rocks.* Alps.

✓ 11. **carnea.** Stems tufted. L. in rosettes, lineari-subulate, obtuse. Scape flexuose, hairy: this and Fl.-stalks covered with a short, stellate pubescence. Bracts acute, nearly equalling Fl.-stalk. **p.** 7, 8. *High granitic rocks.* Vosges. Alps. Auv. Pyr.

✓ 12. **obtusifolia.** Tufted. Scapes numerous, covered, as well as Fl.-stalks, with a short stellate pubescence. L. in rosettes, lanceolate, obtuse, sessile, glabrous, with very short cilia. Fl.-stalks much exceeding lineari-ovate, acute bracts; 2–4 times calyx, hardly one-fifth of scape. **p.** 6, 7. *Very high.* Alps.

✓ 13. **lactea.** Tufted. L. in rosettes, lanceolato-linear, acute, sessile, ciliate. Scape and Stalk smooth. Fl.-stalks 5–8 times calyx, more than one-third of scape. Bracts lineari-lanceolate, acute. **p.** 7, 8. *Calc. mountains.* Alps. Jura. Cev.

C. *Annual or biennial. Root simple. L. toothed. Flowers in involucrate umbels.*

✓ 14. **septentrionalis.** Scape solitary, erect. L. lanceolate, dentate, forming a rosette. Fl.-stalks downy. Cal. smooth, shorter than corolla. Teeth not half as long as tube. **b.** 5, 6. *Sandy fields.* e. G. *occ.* Mountains of Dau. and Pyrenees.

15. **nana.** Scape nearly solitary, suberect. L. oblong, attenuate, forming rosettes. Inflorescence hairy. Fl.-stalks more than half as long as scape. Cal. turbinate, pentagonal, exceeding corolla. **a.**? 5, 6. *Meadows.* Nebrodes.

✓ 16. **elongata.** Scapes many, spreading. L. lanceolate, dentate, forming rosettes. Fl.-stalks more than half as long as scape. Teeth of Cal. shorter than tube, exceeding corolla. **b.** 7, 8. *Open hills and sandy fields.* e. and n. e. Germany.

✓ 17. **maxima.** Scapes many, spreading. L. in rosettes, broad elliptic, dentate. Bracts obovate, exceeding pedicels. Teeth of Cal. equalling tube, exceeding corolla. **a.** 4, 5. *Fields.* Fr. Maintz. Cobl. Vallais. Valtellino.

667. GREGORIA.

✓ 1. **vitaliana.** Stems numerous, prostrate. L. linear, acute. **p.** 7, 8. *Very high, rocky.* Alps. Pyr. Abruzzi.

668. PRIMULA.

A. L. rugose, not fleshy, nor mealy beneath. Sp. 1–4.

B. L. not fleshy, mealy beneath. Margin revolute when young. Sp. 5–7.

C. L. fleshy, not rugose, convolute when young.

- **i.** Flowers numerous. Stalks unequal, exceeding involucre.
  - **a.** Throat of Corolla mealy. Sp. 8–14.
  - **b.** Throat not mealy. Sp. 15–17.
- **ii.** Flowers 2–6. Stalks much shorter than involucre.
  - **a.** Margin of L. entire. Sp. 18–20.
  - **b.** Margin of L. cut. Sp. 21–25.

A. *Rugose, not fleshy. Margin revolute when young. Calyx prismatic. Flowers yellow.*

1. **vulgaris.** Scapes radical, 1-flowered. L. gradually tapering downwards. Teeth of Cal. lanceolato-linear, acuminate. Border of Cor. flat. **p.** 3. *Woody.*

2. **elatior.** Scapes umbellate. Teeth of Cal. lanceolate, acuminate. Border of Cor. nearly flat. **p.** 3, 4. *Hedges and thickets.* occ. *We have two var.:—one with tapering L., like those of* P. vulgaris, *which Smith considers a var. of that species; and one with the L. abruptly contracted, like those of* P. veris, *which seems to me a var. of* veris. *The early L. of* P. vulgaris *are, however, sometimes abruptly contracted, like those of* P. veris, *and the later ones of* P. veris *are sometimes, though rarely, attenuate.* P. elatior *is between them in this, as in everything else. The mouth of the corolla is in all three sometimes nearly hemispherical, and sometimes cylindrical, forming a sort of second tube. The first flowers of the first var. of* P. elatior *are frequently solitary, but smaller and of a darker colour than is usual in* P. vulgaris.

3. **veris.** Scapes umbellate. L. oblongo-ovate, abruptly contracted and then attenuate, green on both sides. Teeth of Cal. ovate, not acuminate. Border of Cor. concave. **p.** 4. *Meadows.*

4. **suaveolens.** Scapes umbellate. L. abruptly contracted; the terminal part cordate, white beneath. Teeth of Cal. ovato-lanceolate, acute. Border of Cor. concave. **p.** 4–6. *Pastures.* Apenn.

B. *L. hardly rugose, not fleshy, mealy beneath, revolute when young. Fl. purplish.*

5. **longiflora.** L. oblongo-obovate, somewhat crenate. Tube of Cor. three times calyx. **p.** 7. *Very high pastures.* Vall. *rare.* Tyrol. Ven. Alps.

6. **farinosa.** L. obovato-lanceolate, crenato-dentate. Tube of Cor. about equalling calyx. Border of Cor. nearly as long as tube. Germen obovate. Stigma capitate. **p.** 6–8. *Boggy meadows.* n. G. Alps. Jura. Pyr.

7. **scotica.** L. obovato-lanceolate, denticulate. Tube of Cor. about equalling calyx, twice as long as border. Stigma with 5 points. **p.** 7. *Sandy shores.* n. Sc.

C. *L. fleshy, not at all rugose, convolute when young. Flowers in umbels.*

i. *Flowers numerous. Stalks unequal; the longer two or three times calyx, and exceeding involucre.*

a. *Throat of Corolla mealy.*

8. **Palinuri.** "Mealy. L. broad obovato-spatulate, with acute, unequal teeth, and glandular cilia. Umbel somewhat cernuous. Bracts numerous, unequal. Cal. mealy: segments acute. Cor. funnel-shaped. **p.** 3, 4. *Calc. rocks.* Cape Palinurus. K. Nap."—Bert. *It is not stated whether the throat of Cor. be internally mealy or not.*

9. **latifolia.** Some Fl. with short style, and stamens in throat of corolla. Cal. mealy, exceeding capsule. L. obovate or oblongo-obovate, serrato-dentate from middle upwards, ciliate, and sprinkled on both sides with glanduliferous hairs. Scape and Fl.-stalks also with short glanduliferous hairs. **p.** 6, 7. Grisons. Vall.—Koch.

10. **Auricula.** Some Fl. with short style, and stamens in throat of corolla. Cal. mealy, somewhat shorter than capsule. L. obovate; margin mealy or densely ciliate with short glanduliferous hairs. Scape *glabrous* at base; upper part and Fl.-stalks mealy. Floral L. ovate, obtuse. *Fl. yellow.* **p.** *As snow disappears.* Alps.—Koch. Apenn.

11. **pubescens.** Some Fl. with short style, and the stamens about middle of tube of corolla. Cal. mealy. L. obovato-oblong, dentato-serrate at top: the margin densely ciliate with short, glanduliferous hairs. Scape *glabrous at base.* Upper part of Fl.-stalks mealy. Floral L. ovate, obtuse. *Fl. purple.* **p.** 4, *when high later. Rocks.* Abundant near Pregrat in Tyrol.—Koch.

12. **venusta.** Cal. mealy within and on margin, about one-third of tube of corolla.

L. obovate, smooth on both sides. Floral L. ovate, obtuse. Caps. about equalling calyx. Scape smooth. *Fl. purple.* **p.** 4, 5. *Mountains.* Idria. Monte Baldo.

13. **marginata.** " L. oblongo-obovate or obovate, deeply, unequally, and obtusely dentate. Margin white, mealy. Cal. campanulate, patulous, mealy within and on margin. Caps. acute. Cor. salver-shaped. **p.** 7, 8. Lig."—Bert. Pyr. Dau.

14. **carniolica.** Smooth. L. obovate or oblong. Cal. nowhere mealy, about one-third of tube of corolla. Caps. about equalling calyx. *Fl. purple.* **p.** 5, 6. *Mountains.* Carn.—Koch, *who does not state whether the throat of Cor. is mealy.*

b. *Throat of Corolla not mealy.*

15. **rhætica.** Scape and Fl.-stalks furnished with minute, sessile glands. Stamens of short-styled Fl. placed beneath the top of tube. L. oblongo-obovate or obovate, denticulato-serrate at top. Margin densely ciliate, with short glanduliferous hairs. *Fl. lilac.* **p.** 4, 5. Grisons.—Koch.

✓ 16. **pedemontana.** Scape and Fl.-stalks covered with glands on very short stalks. Stamens of short-styled Fl. placed below middle of tube. L. oblong or obovate, obsoletely repando-dentate. Margin ciliate with short glanduliferous hairs. *Glands usually reddish.* **p.** 6, 7. *Mountains.* Vall. Grisons.—Koch.

✓ 17. **villosa.** Scape and Fl.-stalks covered with glands on jointed hairs. Stamens of short-styled Fl. a little above middle of tube. L. obovate or subrotund, dentato-serrate from middle upwards, viscoso-pubescent, ciliate with glanduliferous hairs. Cal. twice as long as capsule. **p.** 5, 6. *High granite.* s. Alps. Pyrenees.—Koch.

ii. *Flowers* 2–6. *Stalk shorter than involucre.*

a. *Margin of L. entire.*

18. **glaucescens.** L. oblongo-lanceolate, acute, with cartilaginous margin, smooth. Cal. a lengthened tube, with 5 acute teeth. Cor. funnel-shaped, *yellow.* **p.** 5, 6, 7. Valtellino. Mts. about Lake of Como.—Bert.

✓ 19. **spectabilis.** L. elliptico-lanceolate or lanceolate, with cartilaginous margin. Floral L. linear, equalling or exceeding Fl.-stalks. Cal. tubuloso-campanulate, shorter than tube of corolla. (L. and Teeth of Cal. obtuse, Bert.) *Fl. purple.* **p.** 7, 8. *Mountain gravel.* c. Alps.

20. **integrifolia.** L. elliptico-oblong, entire, without cartilaginous margin. Margin and Scape villous. Floral L. linear. Cal. tubuloso-campanulate, shorter than tube of corolla. **p.** 7, 8. *High boggy.* e. Sw.—Koch. ✓

b. *Margin of L. cut.*

21. **dinyana.** L. oblongo- or lanceolato-cuneate, sprinkled with very short hairs. Margin densely ciliate, repand or denticulate at top. Teeth pointless. Floral L. ovato-lanceolate. Cal. campanulate. **p.** 6, 7. *High.* Albula in Grisons.

22. **glutinosa.** L. cuneato-lanceolate, obtuse, glutinous, but without hairs. Margin serrate from middle upwards. Serratures pointless. Floral L. oval. Fl. nearly sessile. **p.** 6–8. *High moist.* Sty. Carinthia. Tyrol. —Koch. Valtellino. Belluno. ✓

23. **Allionii.** L. obovate, somewhat mucronulate, denticulate, covered on both sides, as well as Scape and Cal., with viscid hairs. Fl. on very short stalks. Floral L. cuneate. **p.** 6. *Calc. rocks.* Fiume.—Koch.

24. **floerkiana.** L. obovate, cuneate at base, somewhat glutinous, but without hairs, rounded at the end. Margin from middle crenato-dentate. Teeth acuminate, mucronate. Floral L. ovali-oblong. Fl. on very short stalks. **p.** 7, 8. *Very high.* s. Tyr. upper Carinth. upper Carn.

25. **minima.** L. obovato-cuneate, smooth, truncate, obtuse. Crenatures acuminato-mucronate. Floral L. linear. Fl. 1 or 2, nearly sessile. **p.** 7, 8. *High moist rocks.* c. Alps. Sudetes. ✓

669. CORTUSA.

1. **Matthioli.** L. cordato-subrotund, lobed, acutely dentate. Cor. exceeding calyx. **p.** 7. *Wet, in high valleys.* Swab. Bav. n. Tyr. Styria. n. e. It. ✓

670. SOLDANELLA.

1. **montana.** L. subrotund. Cor. cloven to middle. Scales of the Mouth nearly equalling filaments. Style as long as corolla. Glands of Fl.-stalks on short hairs. **p.** 5–7. *Boggy mountain woods.* Salzb. Aust. Boh. ✓

2. **alpina.** L. subrotundo-reniform. Cor. cloven to middle. Scales of Mouth equalling filaments. Style as long as corolla. Glands of Fl.-stalks sessile. **p.** 5. *Very high.* Alps. Pyr. Apenn. ✓

3. **pusilla.** L. cordato-reniform. Cor. hardly cloven to one-third. Scales of Mouth 0. Style shorter than corolla. Glands of Fl.-stalks sessile. *Cor. almost copper-coloured.* **p.** 5. *Very high.* Alps from Sw. to Sty.—Koch.

4. **minima.** L. circular. Cor. cloven to one-third. Scales of Mouth very short or 0. Style shorter than corolla. Glands of Fl.-stalks on short hairs. **p.** 6, 7. *Mountains.* Tyr. Carinthia. Carn. Sty.—Koch.

671. CYCLAMEN.

1. **europæum.** L. cordato-subrotund, dentate, appearing with flowers. Crenatures pointless. **p.** 5–9. *Woody hills.* Alps. Boh. Eng. Fr.

2. **hederifolium.** Root large, orbicular, depressed. L. cordato-ovate, angular, finely denticulate, appearing after flowers. **p.** 9, 10. *Dry stony hills.* Vall. s. Fr.? Cors. m. and e. Italy.

3. **Poli.** Root orbicular, depressed. L. oblongo-lanceolate, hastate or sagittate, finely denticulate, appearing after flowers. **p.** Autumn. *Woods.* Mastrati. Pisciarelli.

4. **vernum.** Root small, orbicular, depressed. L. cordato-ovate, angular, and with large, unequal teeth; appearing with flowers. Teeth and angles acute. **p.** 5. *Woody.* It.

5. **repandum.** Root small, orbicular, depressed. L. cordato-subrotund, obtuse, slightly and bluntly repand; appearing with flowers. (Crenatures and angles mucronulate, Koch.) **p.** 4, 5. *Sandy woods.* Istria. Ravenna.

672. HOTTONIA.

1. **palustris.** Fl. stalked, in whorls. L. pectinato-pinnatifid. **p.** 5. *Water.*

673. SAMOLUS.

1. **Valerandi.** L. obovate. A Bract in the middle of the pedicel. Rac. corymbose. **p.** 6–8. *Moist.*

674. GLAUX.

1. **maritima.** L. simple, opposite, oblong. Fl. small, axillary, solitary. **p.** 6–8. *Salt meadows and banks.*

LXXVII. GLOBULARIEÆ.

Calyx 5-cleft, tiled in the bud. Corolla inferior, of 1 petal, 5-cleft. Stamens 4; there being none between the two upper divisions of the corolla. Ovary of 1 cell, and 1 pendulous seed.

675. GLOBULARIA.

1. **Alypum.** Stem shrubby, erect. L. lanceolato-spatulate, sometimes tridentate. Scales of Involucre imbricate, ciliate. Heads nearly sessile. **s.S.** Spring. *Warm stony.* mdt. Fr. Lig. Sic.

2. **cordifolia.** Stem shrubby, prostrate, much branched. L. spatulate, stalked, often emarginate, with or without an intermediate tooth, smooth. Heads on stalks which are nearly naked. **w.** 5–7. *Stony.* Alps. Vosges. Jura. Apenn.

3. **nudicaulis.** Herbaceous, erect. Root multiceps. L. oblong, crenate, rounded at top. Stalk naked, or with 1 or 2 scales. **p.** 6–8. *Mountains.* s. Alps. Pyr.

4. **vulgaris.** Herbaceous, erect. Root multiceps. Root-L. spatulate, emarginate or tridentate. Stem-L. numerous, lanceolate. **p.** 5, 6. *Calc. stony.* Fr. G. It.

5. **incanescens.** Herbaceous, diffuse. Root woody. Root-L. orbiculari-spatulate, stalked, 3-nerved, pulverulent, sometimes emarginate. Stem-L. ovate, acuminate. Upper Lip of Cor. entire; lower 3-cleft. **p.** 6, 7. *Mountains.* Massa and Carrara.

LXXVIII. PLUMBAGINEÆ.

Calyx plicate. Corolla regular, 5-cleft or 5-petalous. Stamens inferior or fixed to the claw of the Petals. Ovary of 5 carpels, each of one cell and one seed. Styles 5; or 1, with 5 stigmas.

676. PLUMBAGO.

✓ 1. **europæa.** Lower L. obovate, stalked; upper ovato-lanceolate, amplexicaul, rough on margin. Bracts 3, the intermediate largest. **p.** 8, 9. *Uncult.* s. Fr. Istria. It.

677. STATICE.

In this genus, (except in the first and last divisions, each containing with me only one species,) the flowering-stalk is leafless, produced annually from a rosette or tuft of L., and much branched. A Scale, or what perhaps might be called a bract, if it were not convenient to confine the name to some part more connected with the flowers, occurs at each ramification. The Flowers are in spicules, placed in two rows, but generally pointing one way, and disposed in spikes at the ends of the branches. At the base of each spicule is a scale, like those at the ramifications, but here called the outer bract; within this is a second bract, which is almost always membranous; and then a third, called the inner, larger and more substantial, at least in the middle, and wrapping round the spicule. Where the spicule has more than one flower, there is usually another membranous bract to each. The Calyx is formed of a tube with 5 ribs, generally somewhat hairy, and ending in 5 red or dark-coloured nerves, which, except in one or two instances, do not reach to the end of the white border. It is to be understood, where not mentioned, that the lobes of this border are obtuse, that the inner bract is obtuse and with a membranous border, and that the outer is usually more or less acute, *i. e.* forming an angle at the extremity, though often a very obtuse one. In the dried plant the surface of the L. and stem becomes wrinkled. This must not be confounded with the tubercular roughness characteristic of some species. M. Boissier, in the twelfth volume of De Candolle's 'Prodromus,' has made quite a new disposition of the species, which I have for the most part adopted.

A. Petals distinct, or only adhering at the base. Styles separate.
  i. Utriculus circumsciss. Sp. 1.
  ii. Utriculus indehiscent.
    a. Barren Branches few or 0.
      * Sinus of Calyx broad and plicate. Sp. 2, 3.
      ** Sinus of Calyx narrow.
        † Spicules touching. Sp. 4–9.
        †† Spicules separate.
          ‡ Plant smooth. Sp. 10–14.
          ‡‡ Scape and Bracts tubercled. Sp. 15.
    b. Barren Branches numerous.
      * Bracts membranous only at top and on margin.
        † Scapes continuous. Branches not divaricate. Sp. 16–20.
        †† Scapes jointed. Sp. 21–25.
      ** Outer Bracts altogether membranous. Sp. 26.
B. Petals united in a tube. Sp. 27, 28.
C. Styles united to the middle. Flowering-stem leafy. Sp. 29.

A. *Petals distinct or only adhering at the base.*

i. *Utriculus circumsciss.*

1. **sinuata.** Hirsute. Stem herbaceous, leafy, winged. Root-L. lyrate, obtuse. Stem-L. acute. Cal. entire. **p.** 5–7. Cal. Sic. Sardinia. ✓

ii. *Utriculus indehiscent.*

a. *Barren branches few or* 0.

* *Sinus of Calyx broad, plicate, often with one or more teeth.*

2. **rariflora.** Pan. not corymbose: the branches straight, or curved inward. Spicules separate. L. oblongo-lanceolate, one-nerved, mucronate. **p.** 7, 8. *Salt marshes.* ✓

3. **Limonium.** Pan. corymbose: branches curved outward. Spicules crowded. *The mucro of the L. in this species sometimes originates from the margin, sometimes from that and the midrib combined, and sometimes from the midrib alone, the margin being continued in front of it.* **p.** 8, 9. *Salt marshes.* ✓

β. *Gmelini*, Koch. Lower branches of Pan. barren.

γ. *drepanensis*, Tin. Branches rough.

I gathered a plant at Port Louis, Brittany, in July 1836, which has the Cal. of this section, but the Stem is woody and a good deal branched, bearing several low, corymbose scapes. The L. are small, the larger only about 1 inch long, instead of 6 or 7, as they are in *Limonium*, elliptico-spatulate, the haft as long as the blade, and with a slender terminal mucro. It is not noticed by Lloyd in the Fl. of the Loire Inférieure.

** *Sinus of Calyx narrow, toothless.*

† *Spicules touching.*

4. **ovalifolia.** L. ovato-lanceolate, coriaceous, canaliculato-concave, acuminate. Pan. corymbose, very dense. *Spicules* $1\frac{1}{2}$ *line or 2 lines long.* Upper Bract not keeled. **w.** 7, 8. *Sea-shore.* w. Fr.

5. **lychnidifolia.** L. coriaceous, obovato-lanceolate, canaliculato-concave, acuminate. Pan. pyramidal. Spikes not crowded. *Spicules 3 lines long.* Upper Bract somewhat keeled. **p.** 8. *Sea-shore.* Narb. La Teste. Brittany.

6. **densiflora.** L. plano-convex, small, fleshy, ovate, acute (obtuse, Duby). Spikes 1 to 3 on a branch. Spicules regularly and densely tiled in broad ovate spikes. All the Bracts obtuse. **p.** 7. *Sea-shore.* Fr. Sic.

7. **auriculifolia** (*oxylepis*, Boiss.). L. spatulate, flat, obtuse (acute or acuminate, Bert.). Haft short. Pan. long, with short branches. Inner Bract rather acute, the *brown* and somewhat keeled back being continued quite to the extremity. Inner Margin reddish. **p.** 6. *Shores* of Mdt.

8. **Dodartii** (*spatulata*, Hooker). L. obovato-spatulate, 3-nerved in lower part, pointless, or with a short, terminal mucro. Haft as long as blade. No barren branches. Outer Bracts about half as long as inner. **p.** 8, 9. *Sea-shore.*

9. **occidentalis.** L. lanceolato-spatulate, without lateral nerves. Mucro, if any, setaceous below the tip. Haft as long as blade. *There are usually a few small, barren branches.* Outer Bracts about half as long as inner. Spikes more lax and less regular than in Sp. 8. **p.** 8, 9. *Sea-shore.*

†† *Spicules separate.*

‡ *Scape and Bracts smooth.*

10. **globulariifolia.** L. obovato-spatulate, somewhat acute (3–5-nerved, Koch), mucronate ($\frac{8}{10}$ *to 2 inches long*, Desf.). Haft short. Outer Bracts about one-third of inner. Border of Cal. half as long as tube. **p.** 6, 7. mdt. Fr. Between Grado and the mouth of the Isonzo, on the Gulf of Trieste.

11. **sibthorpiana.** L. small, obovato-spatulate, somewhat obtuse, 1-nerved, with a rather long mucro and short haft. Spikes short. Spicules rather crowded. Outer Bract about one-fourth of inner. Border of Cal. as long as tube. Nerves strong, dark. **p.** *Shores.* Ali, s. of Messina.

12. **duriuscula.** L. obovato-spatulate, somewhat rough on upper surface. Haft short. Scape low, and loosely panicled. Inner Bract three times as long as outer. Nerves of border persistent, red, at last recurved, tearing the membrane. Lobes often acute. **p.** 7, 8. mdt. France.

13. **psiloclada.** L. obovato-spatulate, obtuse or retuse, pellucid. Margin somewhat revolute. Haft very short. Branches of Pan. spreading, slender. Upper Bract five times lower, reddish towards margin. Border of Cal. half as long as tube. **w.** 5–9. *Shores* of Mdt.

14. **minutiflora.** L. small, obovato- or oblongo-spatulate, retuse or very obtuse, pointless. Margin somewhat revolute. (Haft long, Guss.) Pan. short. Bracts *reddish*; inner three times as long as outer. Border of Cal. half tube. Nerve thick, red. **p.** 6, 7. *Stony shores.* It. islands. *Branches somewhat jointed and rather brittle.*

‡‡ *Scape and Bracts tubercled.*

15. **echioides.** L. oblongo-spatulate, scabrous. Branches spreading, somewhat recurved. Border of Cal. disappearing, and leaving the *red*, naked, spreading, and somewhat hooked nerves. **a.** 5–7. *Shores.* Mdt.

b. *Barren branches numerous.*

* *Bracts membranous only at top and on margin.*

† *Scape continuous. Branches not divaricate.*

16. **oleifolia** (*virgata*, Boiss.). L. thin (coriaceous, Bert.), oblongo- or lanceolato-spatulate, obtuse or retuse; (the pellucid margin revolute, J. W.) Haft long. Barren Branches branched, rigid, and somewhat pungent. Upper Bracts somewhat keeled, four times lower. **p.** or **w.** 5–7. *Shores* of Mdt.

I met with a plant at Civita Vecchia, in June 1832, with a long, narrow panicle, and the barren branches simple and spine-like. Query if belonging to this species?

?? ✓ 17. **reticulata.** "L. obversely lanceolate, cuneate, obtuse. Stems decumbent, much branched, divaricate. Branches crossing each other. Spikes lax. Spicules few. Lobes of the Cal. of the Fruit erecto-patulous, acute. **w.** 5, 6. Maretimo."—Bert.

18. **Tineii.** Woody, much branched. The perennial Stems decumbent, with long leafy branches. L. small, obovato-spatulate. Barren Branches somewhat pectinate. Fl. few, remote. **w.** 7, 8. *Volcanic.* Pantellaria.

- *α. gracilis.* Flowering-stems slender. Spicules 2-flowered.
- *β. parvifolia.* Perennial Stems almost flagelliform. Flowering-stems slender. Spicules 1-flowered.
- *γ. pygmæa.* Perennial Stems fibrillose. Flowering-stems firm, almost jointed. Spicules 3-flowered.—Guss., *who adopts these from Tineo as* 3 *species. Boissier unites them all to* S. dictyoclada, *to which the description does not lead us.*

✓ 19. **minuta.** L. small, obovato- or lanceolato-spatulate, somewhat fleshy, obtuse or retuse, channeled above, keeled below. Margin revolute, not pellucid. Stem rough, sometimes hairy. Barren Branches nearly simple. **w.** 5, 6. Mars. Toul. Hyères.

β. acutifolia, Bert. L. acute. Sard.

✓ 20. **pubescens.** L. small, obcordato-cuneate, channeled above, keeled below. Margin revolute, not pellucid. Stem densely hairy, hardly rough. Barren Branches compound. Outer Bract very small. **w.** 6, 7. *Shores of* Prov. and western Liguria.

†† *Scapes jointed, the divisions contracted at one or both ends, generally divaricate.*

21. **dictyoclada.** L. small, lanceolato-spatulate, obtuse. Haft rather long. Stem rough, not hairy. Barren Branches multifido-dichotomous, divaricate. Spicules distant. Upper Bracts four times as long as outer. **p.** 7, 8. Sard. Cors. Sic. *Boissier puts to this* dichotoma *of Guss., which Gussone himself refers to* S. Smithii; *i. e., to* oleifolia *of Smith,* virgata *of Boissier.*

22. **cancellata.** All velvety. L. small, obovato-cuneate, retuse. Scape low, very much branched, rectangularly flexuose. Middle Bract hyaline, equal to outer; inner four times as long. Tube of Cal. hairy all over. Lobes acute. **w.** 7. *Shores.* Fiume. Istria. *Perhaps* S. reticulata *of Linn.*

23. **cumana.** "Covered with a bran-like down. L. obovato-spatulate, obtuse or retuse. Margin somewhat revolute. Branches very much dichotomously subdivided; the barren ones straight, with long, slender joints. Spikes very lax, few-flowered. Bracts hairless; the outer very small and almost entirely membranous; inner six times as long, the herbaceous back somewhat keeled, and produced almost to the extremity. Border of Cal. about as long as tube. Lobes oblong, rather acute. **p.** 5, 6. *Shore.* Naples.

"*β. tenuicula,* Guss. Hairless. Maretimo."—Boiss.

24. **articulata.** Fleshy, becoming black in drying. L. small, oblongo- or lineari-spatulate, nearly disappearing before the flowering. Scape rough, very brittle at the joinings. Joints contracted at each end; upper almost globular. Spicules few, or solitary. Upper Bract five times as long as lower. Lobes of Cal. somewhat acute. **p.** 7, 8. *Maritime rocks.* Corsica.

25. **cordata.** Quite smooth. L. flaccid, obovato-spatulate, rounded at the end or retuse. Branches straight, very brittle at the joinings. Joints contracted at each end, angular. Spikes long and lax. Inner Bract three times as long as outer. Border of Cal. rather acute. **p.** 7–9. *Stony shores.* Sic.

** *Outer Bracts altogether membranous; inner very nearly so.*

26. **caspia.** Rough, hairless. L. obovato- or lanceolato-spatulate, obtuse. Scape much branched. Barren Branches capillaceo-multifid; upper forming a corymbose panicle. Spicules crowded in short spikes. Tube of Cal. short, conical. Border longer than tube. Lobes rather acute, denticulate. **p.** or **w.** 7–9. *Shores and salt marshes, chiefly of* Mdt.

B. *Petals united in a tube. Calyx falling short of Bracts.*

27. **diffusa.** L. very small, narrow linear. Scales of barren Branches ovate, acute. Bracts membranous, ovato-lanceolate, acuminate. Spikes somewhat recurved, lax, ending in barren branches. Teeth of Cal. acute, mucronulate. **w.** 7, 8. *Salt marshes.* Ste. Lucie.

28. **ferulacea.** Leafless. Scales of barren Branches and outer Bracts setaceo-acuminate.

Spicules densely clustered in short spikes. **w.** 6, 7. *Salt marshes.* mdt. Fr. Sic.

C. *Petals united in the tube of a hypocrateriform corolla. Styles united to the middle!*

29. **monopetala.** Stem woody, leafy, not winged. L. carnoso-coriaceous, lineari-lanceolate, alternate. Spike terminal, brittle. Fl. solitary. **w.** 6, 7. *Salt marshes.* Ste. Lucie. Sicily.

678. ARMERIA.

The spur on the calyx of *A. fasciculata* was, I believe, first noticed by M. Boissier. In the 'Prodromus' of De Candolle, this writer depends much on the hairiness of the calyx, confined to the ribs, or spreading over the whole surface. I find that in species with the latter character, the hairs are stronger and more numerous on the ribs than in the intervening spaces; and in those with the former, that a few small hairs sometimes occur in the interval, and those on the ribs in the upper part of the tube occupy so wide a space that the interval is often hardly perceptible. Still, I think it is in general a recognizable character, and, as such, have noticed it. The hollow at the base of the calyx also, first made use of by him, appears to me to be almost always nearly round, or broadly ovate, or oval. I have only noticed it when it is stated to deviate considerably from this form.

- **A.** Calyx furnished with a Spur. Sp. 1, 2.
- **B.** No Spur to Calyx.
  - **i.** Spicules sessile.
    - **a.** L. all similar.
      - * L. 1-nerved. Sp. 3–9.
      - ** L. more or less distinctly 3- or 5-nerved. Sp. 10–12.
    - **b.** Primary L. broader. Sp. 13–17.
  - **ii.** Spicules stipitate. Sp. 18–23.

A. *Calyx furnished with a spur.*

1. **fasciculata.** Smooth, shrubby, densely leafy. L. linear, entire, channeled, 1-nerved, acute. Cal. ending rather abruptly in 5 very short awns. **w.** 5, 6. *Sandy shores.* Cors. Sard.

2. **Soleirolii.** "Stem shrubby; upper part leafy. L. fascicled, revolute beneath, finely channeled, very narrow linear, somewhat pungent. Scape quite smooth, three or four times longer than L. Bracts somewhat acute. Teeth of Cal. aristato-acuminate, much shorter than corolla. **s.S.** *Maritime rocks.* Calvi."—Duby. *The Spur is not mentioned: I only suppose it to exist from analogy.*

B. *No Spur to Calyx.*

i. *Spicules sessile.*

a. *L. all similar.*

* *L. 1-nerved, the sides almost parallel throughout.*

3. **pubigera.** "Shrubby at base. Stems short, naked at base, tufted. L. in rosettes, short, linear, about as wide as the scape, 1-nerved, rigid, somewhat 3-edged, rather blunt; upper part channeled, dotted, obtusely keeled. Heads small. Bracts altogether scariose: the lower shorter, ovate, somewhat acute; the others obtuse, sometimes with a mucro. Pedicel half as long as tube of calyx. Basal Pit oblong. Tube of Cal. hairy all over: border longer than tube. Div. ovate, short, abruptly awned. **w.** Isl. of Staffa."—Boiss.

4. **ruscinonensis.** "Quite smooth (shrubby at base, Boiss.). L. much crowded, linear or somewhat lanceolato-linear, dentate, quite entire, flaccid. Scape about twice as long as L. Bracts rather broad; outer generally falling short of flowers, cuspidato-acuminate; innermost equalling flowers, emarginate or entire (sometimes with mucro, Boiss.). Ribs of tube of Cal. hirsute (only on nerves, Boiss.). Teeth with a mucro twice as long as themselves. **p.** 5, 6. Port Vendre. Collioure."—Girard.

5. **maritima.** Outer Bracts broad, obtuse, somewhat cuspidate; inner pointless. Tube of Cal. hairy all over. *Fl. lilac.* **p.** 7, 8. *Sea-coasts.*

6. **pubescens.** Outer Bracts shortly triangular, the herbaceous back forming a point beyond the membrane; inner longer and very obtuse. Pedicel as long as the tube of calyx. Tube hairy only on the ribs. **p.** 7, 8. *Sea-shores.*—Boiss.

7. **Halleri.** "L. short, somewhat channeled, without a margin. Outer Bracts small, ovate, with a short mucro; inner twice as large, ovato-subrotund, with a broad margin, equalling calyx of fruit. Pedicel half as long as tube of calyx. Tube hairy only on the ribs. **p.** Hartz. *Perhaps a var. of* A. elongata."—Boiss.

8. **leucantha.** Outer Bracts lanceolate, acuminate; inner obtuse, pointless: all shorter than head. *Fl. brilliant white.* **p.** *Very high.* Cors.—Lois.

✓ 9. **elongata.** Outer Bracts cuspidate; inner mucronate, with excurrent nerve. (Tube of Cal. hairy on the ribs, Boiss.) **p.** 6–9. *Sandy.*

β. *purpurea*? Koch. Fl. dark purple.

** *L. more or less distinctly* 3-*nerved, tapering towards the end.*

✓ 10. **alpina.** L. 1- or obscurely 3-nerved. Outer Bracts oblong, somewhat mucronate, (half as long as inner. Basal Pit oblong. Tube of Cal. hairy only on the ribs, Boiss.) **p.** 7, 8. *Mountain pastures.*

11. **alliacea.** "L. broadly linear, acute, 3-nerved, striate, finely downy as well as the Scape. Bracts oblong: outer smaller, acute; inner very obtuse. Teeth of Cal. ending in long awns. **p.** 6. *Snowy.*"—Bert. *Bertoloni joins with this* A. leucantha. *I insert it because he describes the L. as* 3-*nerved, and because Boissier refers it to* A. plantaginea.

✓ 12. **plantaginea.** L. lineari-lanceolate, acuminate, 3–7-nerved. Outer Bracts cuspidate; inner very obtuse, with excurrent nerve. (Pedicel nearly as long as tube of calyx. Basal Pit elliptic. Tube hairy only on the ribs, Boiss.) **p.** 6, 7. *Sandy.*

β. *cephalotes,* Bert. Border of Cal. erose.

γ. *scorzonerifolia,* Balbis. Outer Bracts short.

δ. *arenaria,* Pers. Outer Bracts exceeding head.

ε. *alliacea,* Lois.? Fl. white.

b. *Primary L. wider than the others.*

13. **juncea.** Cal. hairy all over. L. 1-nerved: outer narrow linear, somewhat denticulate; inner longer, filiform, somewhat channeled at base. Outer Bracts lanceolate, cuspidate, as long as the very obtuse inner. **p.** *Sandy.* Near Montp. and in the Cev.—Boiss.

14. **sardoa.** Tube of Cal. hairy only on the ribs. Stem woody at base. L. 1-nerved, short, acute: lower linear, flat; inner narrow lineari-setaceous, somewhat channeled. Outer Bracts ovato-triangular, acuminate, with a narrow margin; inner oblong, obtuse, with a broad margin. **p.** *Mountains.* Sard.—Boiss.

15. **denticulata.** Woody at base, densely cushioned, smooth. Tube of Cal. hairy only on the ribs. Lower L. soon perishing, lineari-lanceolate (denticulate, Bert.); upper narrow linear. Outer Bracts acuminato-cuspidate; upper shorter, abruptly mucronate. **p.** 5, 6. *Mountains.* Near Sarzana.

16. **nebrodensis.** Woody at base. Tube of Cal. hairy only on the ribs. L. 1-nerved, acute: outer lanceolate; inner narrow linear. Outer Bracts ovate, without a margin; inner twice as long, obtuse, with a broad margin. **w.** Madonie.—Boiss.

17. **magellensis.** Tube of Cal. hairy only on the ribs. Base of plant hardened, and squarrose with the persistent sheaths. L. somewhat recurved, short, linear, obtuse, 3-nerved, channeled; inner narrower. Outer Bracts ovate, obtusely cuspidate, about as long as inner; inner obtuse, sometimes mucronate. **w.** Monte Majella in Abruzzi.—Boiss.

ii. *Spicules somewhat stipitate within involucre. Tube of Calyx hairy only on the ribs.*

18. **Kochii.** Stems cushioned, hardened at base. L. linear, mucronulate, nearly nerveless, flat above, convex beneath. Scape flexuose. Bracts few, very obtuse; the inner gradually larger by means of a broader margin. Pedicel about half as long as tube of calyx. **w.** *High.* Cors.—Boiss.

19. **leucocephala.** Tufted, hardened at base, and covered with the withered sheaths. L. linear, flat, 1-nerved. Margin narrow, prolonged into a short cusp. Outer Bracts few, much shorter than the head, acute; following ones somewhat longer, obtuse, mucronate; those connected with the separate stalks broadly herbaceous on the back, with a membranous margin exceeding the calyx of fruit. Pedicel as long as tube of calyx. **w.** Cors.—Boiss.

20. **Morisii.** Smooth, tufted. Stem clothed at the base with the withered sheaths. L. somewhat coriaceous, very short, oblong or oblongo-lanceolate, acute, 3-nerved, with a narrow, finely serrulate margin. Bracts scariose: outer oblong, acute; inner a little longer, obtuse, with a broad margin. Bracts (innermost) herbaceous on the back, exceeding calyx. Pedicel somewhat longer than tube. Basal Pit oblong. **p.** Sard.—Boiss.

21. **Gussonii.** Rosettes nearly solitary. L. somewhat coriaceous, oblongo-lanceolate or lineari-lanceolate, flat, rather acute, with an entire margin, with 5–7 branched, anastomosing nerves. Bracts scariose: outer shorter, oblong, obtusely acuminate; inner very blunt. Pedicel half as long as tube of calyx. Basal Pit oblong. **p.** Busambra.—Boiss.

22. **pubinervis.** Stems tufted, covered at base with the old sheaths. L. broadly lineari-lanceolate, rather acute, with a narrow margin, about 5-nerved, 3-nerved at top. Nerves ciliate on both sides. Bracts herbaceo-membranous, ovate, obtuse, mucronate; inner without mucro; those of separate stalks with a broadly herbaceous back, exceeding calyx. Pedicel shorter than tube. Basal Pit long oblong. Five ribs of tube hairy, the other five nearly smooth. **p.** *Mountains* near Bayonne.—Boiss.

23. **macropoda.** Quite hairless. Base hardened. L. lanceolate or lineari-lanceolate, long. Bracts green, herbaceous: outer round-ovate, with obtuse mucro; inner oblong, obtuse, with a membranous margin. Pedicel twice as long as tube of calyx. **p.** Monte Vergine, Termini, K. Naples.—Boiss.

LXXIX. PLANTAGINEÆ.

Corolla inferior, of 1, regular, 4-cleft petal. Stamens 4, inserted on the receptacle, or on the base of the corolla. Ovary of 1 cell; or of 2–4 cells, separated by the wings of the central placenta. Style 1.

679. LITTORELLA.

1. **lacustris.** Stem 0. L. linear, somewhat channeled. Barren Fl. stalked; fertile sessile. **p.** 6. *Shallow margins of ponds.*

680. PLANTAGO.

A. No true Stem.

- **i.** Placenta with 2 wings, dividing the Capsule into 2 cells, with two or more seeds in each. Sp. 1–3.
- **ii.** Placenta flat, with 1 seed on each side.
  - **a.** Tube of Corolla hairless.
    - * Plant annual. Sp. 4.
    - ** Plant perennial, but without a woody rhizoma above ground. Sp. 5–14.
    - *** Plant with a woody rhizoma above ground. Sp. 15.
  - **b.** Tube of Corolla pubescent. Sp. 16–19.
- **iii.** Placenta with 3–4 wings. Sp. 20, 21.

B. Plant caulescent. Sp. 22–25.

A. *No Stem.*

i. *Placenta with 2 wings.*

1. **major.** L. ovato-elliptic, spreading, on broad hafts. Scape about as long as L. Spike long, cylindrical. Seeds 8. **p.** 7–9. *Meadows and uncult.*

β. intermedia. L. coarsely serrate. Bracts nearly as long as calyx.

2. **Cornuti.** L. elliptic, entire, stalked. Scape 2 or 3 times as long as L. Spike very long, cylindrical. Seeds 2 in each cell. **p.** 7, 8. *Salt marshes.* Montp. Trieste. n. e. It.

3. **brutia.** L. oblong, acute, with large teeth pointing different ways. Stalks short. Scape decumbent. Fil. hairless. Seeds 2 in each cell. **p.** 6. Monte Polino in Cal.

ii. *Placenta flat. Seeds 1 on each side.*

a. *Tube of Corolla smooth.*

* *Plant annual. L. erect.*

4. **Bellardi.** L. lineari-lanceolate, acute, 3-nerved. Scape hardly exceeding L. Bracts and Div. of Cor. acuminate. **a.** 4, 5. *Dry.* mdt. Fr. Istria. It.

** *Plant perennial. No above-ground rhizoma.*

5. **media.** L. elliptic ovate, *length about* $1\frac{1}{2}$ *breadth,* attenuate into a short, broad haft, densely pubescent. Scape terete. Spike short, cylindrical. Bracts scariose, acuminate, as long as calyx. **p.** 5, 6. *Dry meadows and pastures.*

6. **lanceolata.** L. lanceolate, *length* 4–12 *times breadth,* 3–7-nerved. Scape with 5 furrows. Spike globose, ovate or oblong. Bracts hairless, with a long scariose acumen. Lateral Div. of Cal. somewhat acuminate, not ciliate on margin. **p.** 3–7. *Meadows and pastures. I follow others in making the characters depend in part upon the pubescence, as without it it seems impossible to distinguish the species. Yet in our English plant I find the Bracts sometimes quite smooth, and sometimes densely hairy on the back. The Scape,*

also, is sometimes furrowed and sometimes finely and indefinitely striate, and the Spike of Fruit sometimes globular and sometimes cylindrical.

7. **altissima.** "L. lanceolate, 5–7-nerved. Scape with more than 5 deep furrows. Spike oblongo-cylindrical. Bracts ovate, acuminate, hairless. Lateral Div. of Cal. rounded at the end, ciliate on margin. **p.** 4, 5. *Meadows.* s. Ger."—Koch. It.

8. **victorialis.** L. very narrow lanceolate, white with somewhat silky hairs. Spike dense, ovate. Bracts acuminate, hairy in the middle along the back. **p.** 6–8. *Calc. rocks.* Mont Victoire. Gap. Carn. s. Tyr. Ven. Alps.

9. **sericea.** Hairs scattered. L. lanceolato-linear, acuminate, on very short stalks. Spike ovate. Bracts oblong, acute, bearded at top, naked at back. Div. of Cor. ovate or lanceolate. **p.** 5–7. Valley of Pisio in Pdm.

✓ 10. **Lagopus.** L. lanceolate. Scape striate. Spike dense, oblong or globose. Bracts ovato-lanceolate, covered on the back and top with silky hairs. Div. of Cor. hairy on the back. **p.** 3–5. *Dry stony.* s. France. Istria. Italy.

✓ 11. **montana.** L. lanceolato-linear, acuminate. Scape hirsute. Bracts broadly rhombeo-ovate, with a thick, blunt, somewhat excurrent midrib; smooth on back, bearded at the summit. Spike ovate, dense. **p.** 7, 8. *Calc. mountains.* Pyr. Alps. Riesengebirge. Apennines.

12. **fuscescens.** L. lineari-lanceolate. Scape woolly. Bracts obovato-semicircular, with a thick, blunt, somewhat excurrent midrib, bearded at the top. Spike not very dense, cylindrico-oblong. **p.** 7, 8. *High pastures.* w. Alps.—Jord.

✓ 13. **argentea.** L. linear, hardly narrowed downwards, silky, silvery. Scape erect, terete. Spike nearly globose. Bracts obovate, obtuse, silky. **p.** *Dry hills.* Pyr. Prov.

14. **incana.** "L. nearly linear, lengthened, acute, pubescent, flat, woolly at base. Scapes incurved, pubescent, twice as long as L. Spike cylindrical, obtuse. Bracts rounded, somewhat acute, ciliate, rather shorter than ovate, obtuse, nearly smooth segments of calyx. **p.** *Moist mountains.* Pyr. Cev."—Duby.

*** *Plant perennial, with a woody rhizoma above ground.*

✓ 15. **albicans.** L. narrow lanceolate, covered with long, silky hairs. Spikes lax, linear. Bracts rounded, obtuse, covered with short hairs on the back, and bearded at the top with long hairs. Nerves of Cal. with long hairs. **p.** 4, 5. *Barren fields.* s. e. Fr.

b. *Tube of Corolla pubescent. Spike cylindrical.*

[In this Division we often find a woody stem or rhizoma, when growing on or among rocks. In *P. subulata* there is always, I believe, a distinct woody stem.]

✓ 16. **alpina.** L. lineari-lanceolate, smooth at base. Auricles hardly broader than L. (Lateral Nerves nearer to margin than to midrib, Koch.) Spike dense, cylindrico-oblong. **w.** or **p.** 5, 6. *Mountain pastures.* s. Tyr.

✓ 17. **maritima.** L. fleshy, linear, convex on back, channeled, not pungent. Margins smooth and even. Auricles more than twice as broad as L. Scape terete, nodding before flowering. Bracts ovate or lanceolate, mucronate, *as long as calyx.* **w.** or **p.** 7, 8. *Salt marshes and on mountains.*

β. recurvata. Bracts shorter than calyx.

✓ 18. **serpentina.** L. linear, hairless, very narrow, not pungent. Margin ciliato-serrulate. Bracts lineari-lanceolate, exceeding flowers. Segm. of Cal. somewhat mucronulate. **w.** or **p.** 7–9. *Rocky.* s. France. Anjou. Trieste. Fiume.

✓ 19. **subulata.** L. lineari-subulate, 3-edged at top, cuspidato-pungent. Margin even. Scape round. Bracts and Cal. somewhat rough; the latter fringed. **w.** 5, 6. *Stony and sandy.* s. Fr. s. It. Sic.

iii. *Placenta with 3–4 wings, forming as many cells.*

20. **Serraria.** L. lanceolate, pectinato-serrate. Scape round. Bracts shorter than calyx. Div. of Cor. small, ovate, acuminate. Caps. with 2 seeds. **p.** 4, 5. *Clayey fields.* s. It. Sic.

✓ 21. **Coronopus.** L. laciniate or somewhat bipinnatifid. Scape round. Bracts cuspidate. Div. of Cor. ovate, acute. Caps. with 3 or 4 seeds. **a. b.** 5–8. *Barren. Gussone has here four species, which, following Bertoloni, I have placed together.*

α. vera. Annual. Bracts ovate, adpressed, pointless, shorter than calyx.

β. neglecta. **b.** or **p.** Bracts equalling calyx, acuminate, somewhat squarrose.

γ. *Cupani.* **p.** Bracts ovate, acute, half calyx.

δ. *macrorhiza.* **w.** Bracts acuminato-aristate.

B. *Plant caulescent. Seeds* 2.

22. **amplexicaulis.** Herbaceous, hairy. L. lanceolate, alternate. Stalks expanded at base, amplexicaul. Bracts round, with a broad membrane on each side. Segm. of Cor. ovate, acute. **a. b.** 4, 5. Cape Spartivento.

23. **arenaria.** Herbaceous, pubescent. L. linear, sessile. Spike ovoid, on a long stalk. Bracts broad ovate; the lower with a leafy cusp. (Front Div. of Cal. very obtuse; others lanceolate, acute, Koch.) **a.** 6, 7. *Sandy.* m. and s. Europe.

24. **Psyllium.** Herbaceous. L. linear. Spikes ovoid. All Bracts lanceolate, as long as calyx. (Div. of Cal. lanceolate, gradually acuminate, all alike, Koch.) **a.** 5. *Sandy.* s. Fr. Istria. It.

25. **Cynops.** Shrubby. Stem decumbent, much branched. L. narrow linear. Spike nearly globose. Bracts ovate, concave, acute; (the lower with a filiform cusp. Front Div. of Cal. ovate, obtuse, mucronate; others narrower, with ciliate keel, Koch.) **w.** 4–7. *Uncult.* s. Fr. It.

MONOCHLAMYDEÆ.

Calyx and Corolla united into a single Perianth, or one or both wanting.

LXXX. AMARANTHACEÆ.

Perianth 3–5-partite, scariose, persistent. Stamens 3 or 5, inferior. Ovary of 1 cell. L. without sheaths or stipules.

681. ACHYRANTHES.

1. **argentea.** L. roundish ovate, acuminate, silvery beneath. Rac. spike-like. The lower Fl. reflexed. **S.** 3–5. *Dry calc. hills.* Sicily.

682. AMARANTHUS.

A. *Stamens* 3.

1. **albus.** Bracts firm, very acute, and almost pungent, exceeding acute sepals and Fr. Bunches all axillary. Stems erect, much branched. L. retuse, bristle-pointed. **a.** 7, 8. s. Fr. Nap.

2. **polygonoides.** "Fertile Fl. funnel-shaped. Sepals 5, obtuse, with spreading membranous margin. L. rhombeo-ovate, emarginate, with a very short bristle, tapering into a haft as long as the blade. **w.** *Sea-shore.* Pescara."—Ten.

3. **sylvestris.** Bracts membranous, falling short of the ovato-subrotund fruit. Sep. rather acute. Fr. circumsciss. All the Bunches of Fl. axillary. Stems diffuse, ascending. **a.** 7, 8. *Fields and waste.* m. and s. Eur.

4. **Blitum.** Bracts membranous, falling short of subrotundo-ovate fruit. Sep. rather obtuse. Fr. not opening. Bunches axillary and in a leafless, terminal spike. Stems diffuse, ascending. **a.** 7, 8. *Waste.* m. and s. Eur.

5. **prostratus.** Bracts membranous, falling short of oblongo-ovoid fruit. Sep. very acute. Fr. not opening. Bunches axillary, and in a leafless, terminal spike. *Stems prostrate.* **a.** 7, 8. *Waysides.* m. and s. Fr. adr. G. It.

B. *Stamens* 5.

6. **retroflexus.** Spike very compound: the terminal Div. not much exceeding the others. Bracts membranous, with a thick green rib ending in a subulate point, exceeding fruit. Fr. circumsciss. Stem erect. **a.** 8, 9. *Waste.* m. and s. Eur. *common.*

7. **chlorostachys.** Spike compound at base; the middle Div. far exceeding the others.

Bracts membranous, with green rib ending in a subulate point, exceeding fruit. Stem erect. **a.** 8, 9. *Waste.* It. *Query if the plant of Willdenow.*

8. **strictus.** "Raceme compound, erect, straight. L. ovate, concave."—Willd. iv. 390. **a.** "*Fields.* Apulia and Iapygia."—Ten.

LXXXI. PHYTOLACCEÆ.

Perianth inferior, 4–5-partite, imbricate in the bud. Stamens inserted on its base. Ovary with from 1 to 10 cells, each containing 1 seed. Styles as many as there are cells to the ovary. L. alternate, without sheath or stipule. Fruit a berry.

683. PHYTOLACCA.

✓ 1. **decandria.** Stamens 10. Styles 10. **p.** 7, 8. *Escapes.* s. Fr. Trieste. Italy.

LXXXII. CHENOPODIEÆ.

Perianth 5-partite. Stamens inserted on its base. Ovary of 1 cell and 1 seed, superior, or half superior. Fruit dry, not bursting, included in the persistent perianth. L. without sheaths or stipules.

Tribe I. Embryo spiral. Flowers complete (except in *Salsola oppositifolia*) Gen. 684, 685.
Tribe II. Embryo bent round albumen. Flowers complete. Stamens 5 . Gen. 686–689.
Tribe III. As II., but Stamens fewer than 5 . . . . Gen. 690–693.
Tribe IV. Flowers monœcious. Stamens 3–5. (*According to A. Moquin-Tandon, the first genus,* Eurotia, *is diœcious.*) . . . . . Gen. 694–696.
Tribe V. Flowers monœcious. Stamens about 12 . . . . . Gen. 697.

TRIBE I.

684. SALSOLA.

✓ 1. **Kali.** L. fleshy, round, spinescent. Floral L. shorter, broad at the base. Cal. of Fr. cartilaginous, with a membranous dorsal appendage. **a.** 6, 7. *Sandy shores.*

α. Appendage broad, flower-like.

✓ β. *Tragus.* Appendage very narrow.

2. **Soda.** Stem diffuse. L. semiterete, unarmed. Cal. of Fl. membranous. Dorsal Appendage thick, semicircular. **a.** 8, 9. *Salt.* s. Fr. *Shores* of Adr.

3. **oppositifolia.** Shrubby, smooth, erect. All L. opposite !, semiterete, acute, unarmed. Dorsal Appendage large, semicircular. **S.** 6–8. Agrigentum. Termini. Lopadusa.

4. **vermiculata.** Shrubby, much branched, erect. L. alternate, short; the lower filiform. Floral L. ovate. Fl. in lax spikes. Appendage large, semicircular, somewhat concave. **S.** 6–9. Enna, Sic. Near Calarena, Sard.

685. SUÆDA.

1. **fruticosa.** Woody, ascending, smooth. L. short, semiterete, obtuse. Styles 3. Cal. of Fr. naked. **s.S.** 5–7. *Salt.* s. Eng. s. Fr. m. and s. It. Sic. Sard. Cors. *Not in G.* ✓

2. **altissima.** Herbaceous, erect, smooth. L. long, terete, somewhat rigid. Fl. stalked, rising from base of L. Stalks 3-flowered. Cal. of Fr. subglobose. **a.** Italy ?—Moquin.

3. **maritima.** Annual, smooth. L. fleshy, subulate, acute. Fl. in axillary, sessile clusters. Cal. of Fr. with a dorsal scale. **a.** 8, 9. *Sea-shores.* ✓

4. **setigera.** Annual. L. terete, somewhat dilated at base, terminated by a straight bristle, powdery. Fl. in axillary, sessile clusters. Cal. of Fr. rounded, much inflated, juicy. **a.** *Salt marshes.* Montp. Narb.

TRIBE II.

686. KOCHIA.

A. *Calyx of Fruit furnished with thorns or callous points.*

1. **hyssopifolia.** Erect. L. flat, lanceolato-linear, villous. Fl. very hirsute, generally in pairs. Spines of Cal. uncinato-involute. **a.** 5, 6. Baiæ.

2. **hirsuta.** Villous. Stem much branched. L. semiterete, obtuse. Fl. axillary, generally in pairs. Back of Cal. of Fr. with conical, callous points. **a.** 8, 9. *Salt marshes.* mdt. Fr. Holstein. Nap. *Query, if not rather a* Chenopodium, *to which genus it has previously been attached, or a* Suæda. *Both Bertoloni and Koch make it a* Kochia. *Its habit would unite it with* Schoberia maritima *and* C. setigerum.

B. *Calyx of Fruit with wing-like appendages.*

3. **Scoparia.** Branches numerous, rod-like. L. lanceolato-linear, quite entire, ciliate. Rac. axillary, leafy, hirsute. Fl. generally in pairs. Appendage with 3 cuspidate lobes. **a.** 7–9. *Fields.* Trieste. lower Aust. Boh. Bologna. Bergamo.

4. **arenaria.** Hairy. L. subulato-filiform, somewhat fleshy, channeled beneath. Fl. in pairs or threes, very hirsute. Appendages unequal, obtuse. Cal. of Fr. scariose. **a.** 7–9. *Sand.* s. Fr. G. n. e. It.

5. **prostrata.** Woody, pubescent. L. linear, flat. Fl. solitary, the upper approximate. Appendages short, rounded. **w.** 7–9. *Sandy.* mdt. Fr. lower Aust. Morav. Aosta.

687. CHENOPODIUM.

A. L. fleshy, terete. Sp. 1.

B. L. flat, sometimes scaly or mealy, but without hairs or glands.

- **i.** L. undivided, not angular. Sp. 2–4.
- **ii.** L. more or less toothed, divided, or angular.
    - **a.** Seeds mostly erect. Sp. 5–9.
    - **b.** Seeds all horizontal. Sp. 10–17.

C. L. and Branches with glands supporting hairs. Sp. 18–20.

Not well known. Sp. 21.

A. *L. fleshy, terete.*

1. **setigerum.** Much branched. L. hairless, terminating in a long straight seta. Fl. clustered, axillary. **a.** *Salt marshes.* Montp. Narbonne.

B. *L. flat, without hairs or glands.*

i. *L. quite entire.*

2. **aristatum.** Stem ascending or erect. L. lanceolato-linear. Cymes dichotomous, awned! Fl. secund. Cal. of Fr. spreading. Seeds minute. **a.** 8, 9. *Gardens and vineyards.* St. Giobbe, Venice.

3. **polyspermum.** Stems spreading. L. rhombeo-ovate, mucronate, not mealy. Cymes divaricate. Cal. of Fr. spreading, shining, finely dotted. **a.** 7, 8. *Uncult.* ✓

β. acutifolium. Erect. L. acute. ✓

4. **Vulvaria.** Stem procumbent. L. rhombeo-ovate, mealy. Spikes leafless, crowded. Seeds with minute dots. **a.** 7, 8. *Rich. Smells like bad fish.* ✓

ii. *L. toothed or angular.*

a. *Seeds mostly erect.*

5. **glaucum.** Stem decumbent. L. oblong or ovato-oblong, obtuse, repando-dentate, glaucous beneath. Spikes interrupted, nearly leafless. Seeds granulate. **a.** 7–9. *Rich moist.* Eng. *rare.* Fr. G. n. It. ✓

6. **Bonus-Henricus.** L. triangulari-sagittate. Margin entire. Spikes terminal, compound, leafless. **p.** 5–8. *Rich.* ✓

7. **botryoides.** Decumbent. L. triangular or hastate (cuneato-ovate, Bert.), nearly entire, obtuse. Spikes cylindrical, thick, spreading, leafy at base. Seeds smooth, shining, keeled. **a.** 7–9. *Moist sandy shores.* Cornw. Suff. Northumberland. Fiumicino. Pozzuoli.

8. **rubrum.** L. deltoid or nearly ovate, attenuate, usually laciniato-dentate. Clusters in compound spikes, generally leafy. Seeds very minute, about $\frac{1}{40}$ inch in diameter, rounded on edge. **a.** 7–9. *Rich.* ✓

9. **blitoides.** "L. lanceolate, acuminate, cuneate and inciso-dentate at base, somewhat fleshy. Clusters in axillary spikes, forming an erect, leafy raceme. **a.** Along the walls of Paris."—Duby. *Seems to differ from the preceding only in the narrower L.*

b. *Seeds all horizontal.*

10. **urbicum.** L. deltoid, attenuate, repando-dentate, shining. Clusters in long, compound spikes, generally leafless. Seeds $\frac{1}{20}$ ✓

inch in diameter, with minute dots, not readily separating from the tunic. **a.** 8, 9. *Rich.*

11. **album.** L. deltoideo-ovate, eroso-dentate, acute or apiculate. Upper L. lanceolato-oblong, acute, entire. Clusters in sessile spikes (nearly leafless, Koch). Seeds large, shining, smooth. **a.** 7–9. *Rich.*

β. *viride*, Linn. L. dentato-sinuate. Spikes cymose, somewhat leafy.

γ. *lanceolatum*. L. ovato-lanceolate, entire.

12. **pedunculare.** "L. oblongo-lanceolate, nearly entire, acute; upper acuminate. Spikes cymose, on long stalks. Seeds large, shining, smooth. **a.** 6–9. *Uncult.* Sarzana. Fossa. Claudia."—Bert. *This form is perhaps not uncommon in England.*

13. **opulifolium.** L. subrotundo-rhomboid, very obtuse, eroso-dentate; upper elliptico-lanceolate. Cymes nearly leafless. (Cal. of Fr. acutely keeled, Bert.) Seeds large, shining, smooth. **a.** 6–9. *Rich.* m. Eur. *In all the specimens which I possess as the* C. opulifolium *of Duby, or the* C. viride *of Coss. and Ger., most of the leaves terminate in a complete angle, generally about a right angle, or in an acute tooth. A few only of the lower leaves are really obtuse. The proportion of entire upper leaves is much smaller than in* C. album.

14. **ficifolium.** L. unequally 3-lobed, on a wedge-shaped base; upper oblong, acute, entire. Cymes nearly leafless. Seeds dotted. **a.** 7, 8. *Rich. Not in It.*

15. **murale.** L. deltoideo-ovate, attenuate, shining. Teeth acute. Clusters in cymose, terminal, and axillary panicles. Seeds dull, with a marginal keel. **a.** 7–9. *Rich.*

16. **hybridum.** L. not mealy, broadly cordate, angular. Angles acuminate. Cymes panicled. Seeds shagreened. **a.** 8, 9. *Uncult.*

C. *L. and branches covered with hairs or glands.*

17. **ambrosioides.** Erect. L. lanceolate, remotely dentate. Spikes nearly simple, leafy, axillary. Seeds minute, smooth, shining. **a. p.** 6–9. *Uncult.* Aust. Rous. Nantes. It.

18. **Botrys.** Viscid, erect. Branches straight. L. sinuato-pinnatifid. Div. anguloso-dentate, obtuse. Spikes naked, numerous, in cymes. Seeds somewhat granular. **a.** 7–9. *Uncult.* s. Fr. s. G. It. *According to Moquin-Tandon, the Stamens in this and the preceding species are fixed on the receptacle; in the others, on the base of the calyx.*

19. **multifidum.** Prostrate. L. pinnatifid. Segm. linear and lanceolate, unequal. Those of the floral L. pectinate. Fl. axillary, sessile, solitary or clustered. **p.** sometimes **w.** 7–9. Belgioioso near Pavia. Palermo.

Not well known.

20. **sepium.** "Stem herbaceous, erect, somewhat angular, green, branched. L. stalked, ovate, deeply and unequally sinuate, bright green. Rac. simple, leafy. Fil. very long. Stigma feathery. **a.** *Walls and hedges.* Bohemia."—Moq.

688. BETA.

1. **Cicla.** Root thick, fusiform. Stem erect. Lower L. subcordate. Spikes long, interrupted; the terminal one much branched. Bracts linear, about equalling flowers. Fl. about 3 together. **b.** Summer. *Olive-grounds and uncult.* Sarzana. Milan. Novara. Sic.

2. **vulgaris.** Root fleshy. Stem erect. Root-L. somewhat cordate. Spikes at first dense. Bracts lanceolate, far exceeding flowers. Fl. 3 or 4 together. **a.** and **b.** (Adriatic. Heiligenhaven in Ger. *occ.*, Koch.)

3. **maritima.** Stem decumbent. L. ovate, cuneate at base. Spikes long, simple. Bracts lanceolate, exceeding clusters. Fl. generally in pairs. Segm. of Cal. quite entire on the keel. **p.** Summer. *Shores. Not in G.*

689. CAMPHOROSMA.

1. **monspeliaca.** Hirsute. L. and Bracts subulate. Clusters in axillary, nearly sessile spikes. **w.** *Sandy uncult.* s. Fr. Veglia. It. *occ.*

C. glabra, Linn., supposed to grow in Switzerland, is at present unknown.

TRIBE III.

690. POLYCNEMUM.

1. **arvense.** Stem diffuse. L. rigid, subulate, 3-edged, mucronate. Fl. axillary, sessile. Bracteoles hardly equalling Cal. Stamens 3. **a.** 7. *Dry fields.* s. and m. Eur. *Not in Sic. Not at Rome.*

2. **majus.** L. rigid, subulate, 3-edged, mucronate. Fl. axillary, sessile. Bracteoles exceeding calyx. *Fruit twice as large as in the preceding.* **a.** 7, 8. *Waste.* Ger. *occ.*

691. CORISPERMUM.

✓ 1. **Marschalii.** Cal. 0. Wing of the nearly round and smooth Nut denticulate, excise at top, with 2 points in the hollow. **a.** 7, 8. *Sandy.* Schwetzingen near the Rhine.

✓ 2. **intermedium.** Cal. 0. Wing of the nearly round, smooth Nut somewhat denticulate. Tip entire, ending in 2 points. Membranous Margin of upper Bracts half as wide as herbaceous part. **a.** 7, 8. *Sandy shores.* Baltic.

3. **hyssopifolium.** Sep. 2. Nut small, ovali-subrotund, wing entire at top, with 2 points, half as wide as herbaceous part. **a.** 7, 8. *Banks of* Po. s. Fr.

β. *bracteatum,* Viv. With short, ovate Bracts.

4. **nitidum.** Sep. 2. Wings of the smooth somewhat oval Nuts entire at top, with 2 points. Membranous Margin of upper Bracts as broad as the herbaceous part. **a.** 7, 8. *Sandy islands.* Vienna.

5. **squarrosum.** "Spicis squarrosis," Linn. "L. linear, with a pungent mucro. All the Fr. in spikes. **a.** 8, 9. Arles and Avignon."—Lois. *In all the species the L. are* 1-*nerved and mucronate, but by no means pungent.*

692. BLITUM.

1. **capitatum.** Clusters axillary, and in leafless terminal spikes. **a.** 6, 7. *Moist sandy uncult.* Fr. s. Sw. s. Tyr. Lugano.

2. **virgatum.** Clusters all axillary. **a.** 6, 7. *Moist sandy uncult.* s. G. France. n. e. Italy.

693. SALICORNIA.

A. *Stem jointed. No L.*

1. **herbacea.** Stem herbaceous. Spikes stalked. Scales of Cal. 3 on each side; the middle placed higher. Seed oval, about twice as long as broad, hairy. *Stem erect. Spikes linear,* 10–20 *times their width.* **a.** 8, 9. *Muddy shores.*

β. *procumbens.* Stem procumbent. Spikes oblong, 4–8 times width.

2. **radicans.** Woody, procumbent at base, and rooting. Spikes nearly sessile, cylindrical, obtuse: the middle Cal. hardly higher than the others. Seed hardly longer than broad, hairy. **w.** 9. *Muddy shores.* s. Eng. Irel. Fr. Sicily.

✓ 3. **fruticosa.** Shrubby. Spikes nearly sessile, all oblong or cylindrical. Scales of Cal. placed evenly, spreading in the fruit. Cups of Joints expanding horizontally, and becoming flat when in fruit. Seeds tubercled? **s.S.** 8, 9. *Shores* of Mdt.

4. **macrostachya.** Shrubby. Spikes sessile, all oblong or cylindrical. Scales of Cal. placed evenly, erect in the fruit, and partly covered by the still concave cup of the joint. Seeds unequally ovoid, with tubercles in concentric curves. **s.S.** *Shores.* Mdt.

5. **cruciata.** Shrubby. Spikes sessile, cruciate: lower globose; upper cylindrical, with very short, emarginate joints. **s.S.** 9, 10. *Shores.* Sard. w. Sic.

B. *Stem branched, not jointed, leafy.*

6. **amplexicaulis.** L. alternate, fleshy, gibbous, broad cordate, amplexicaul. Spikes ovoideo-oblong, sessile, axillary. **a.** 5, 6. *Muddy salt marshes.* Tarento. w. Sic.

TRIBE IV.

694. EUROTIA.

1. **ceratoides.** L. lanceolate, tomentose, hoary. Fertile Fl. woolly. **S.** 8, 9. *Uncult.* Ehrensbrunn in lower Aust. and near the city of Retz.

695. OBIONE.

✓ 1. **portulacoides.** Woody. Cal. of Fr. sessile, with three equal lobes, muricate on back. L. obovato-oblong. **s.S.** 7, 8. *Clayey sea-shores.*

✓ 2. **pedunculata.** Herbaceous. Cal. of Fr. on a long stalk, 2-lobed, with an intermediate tooth. **a.** 8, 9. *Muddy salt.* e. Eng. n. G. Abbeville.

696. ATRIPLEX.

A. Flowers polygamous. Sepals distinct. Sp. 1–3.

B. Flowers monœcious. Sepals united below.

- **i.** Stems with resinous stripes.
  - **a.** Calyx ovato-triangular, united only at the base.
    - * Seeds (at least the larger) compressed and shagreened. Sp. 4–6.

** Seeds thick, black and polished. Sp. 7–11.

b. Calyx rhomboid, thick and coriaceous. Lobes united on 2 sides. Sp. 12–14.

ii. Stem buff-coloured, without stripes. Calyx almost horny. Sp. 15–19.

Not well known. Sp. 20–25.

None of these characters are satisfactory, being in some degree both variable and indistinct; but they are the best I was able to fix upon, and will, I think, after a little practice, enable the student to name most of the specimens he will meet with.

A. *Flowers polygamous. Sepals distinct.*

1. **hortensis.** L. cordato-triangular, toothed, dull, alike on both sides. Sep. of Fr. subrotundo-ovate, quite entire. **a.** 7, 8. *Escapes* in m. and s. Eur.

✓ 2. **nitens.** L. cordato-triangular, sinuato-dentate, shining green above, silvery beneath. Sep. of Fr. quite entire. **a.** 7, 8. *Rubbish and waysides.* e. G. Hamb.

3. **microtheca.** L. pale and mealy beneath: lower deltoideo-hastate; upper lanceolate or lineari-lanceolate. Margin entire. Cal. of Fr. rhombeo-ovate, acute, entire. **a.** *Escapes.* les Cabanes near Montp.—Moquin.

B. *Flowers monœcious. Sepals united below.*

i. *Stem with resinous stripes.*

a. *Calyx ovato-triangular, the lobes united only at base.*

* *Seeds, at least the larger, compressed and shagreened.*

4. **calotheca.** Lower L. triangulari-hastate, *green on both sides*; upper hastato-lanceolate; uppermost quite entire. Cal. of Fr. cordato-triangular, sinuato-dentate with subulate, acuminate teeth and a long acumen. **a.** 7, 8. *Rubbish and waste.* Berlin. Pom.

✓ 5. **hastata.** Lower L. hastato-triangular, with nearly horizontal lobes; uppermost lanceolate, quite entire. Cal. of Fr. nearly entire. (Spikes interrupted, nearly simple, Bab.) **a.** 7–9. *Rubbish, &c.*

✓ 6. **tatarica.** L. deltoideo-oblong, with advancing lobes; upper lanceolate, very entire. Cal. of Fr. ovato-deltoid, quite entire. Spike of Fr. lax, nodding. **a.** 7, 8. *Dry hills.* Rhine. Saxony.

** *Seeds black and polished.*

7. **microsperma.** Lower L. triangulari-hastate, with horizontal lobes, denticulate, often opposite; upper hastato-subulate. Lobes of Cal. of Fr. quite entire. Clusters panicled in dense spikes. **a.** 7–9. *Waste.* Sic. (Bath, Bab.)

8. **deltoidea.** L. often opposite, (nearly all hastato-triangular, Bab.,) with horizontal lobes. Clusters panicled in dense spikes. Lobes of Cal. of Fr. dentate. **a.** 7–10. *Cult. and waste.*

9. **triangularis.** "Stem and branches prostrate. L. opposite: lower hastato-triangular, with horizontal lobes; middle with ascending lobes on a wedge-shaped base; upper small, lanceolate, entire. Clusters in slightly branched, interrupted spikes. Cal. hardly exceeding fruit, entire, or slightly toothed. **a.** 7, 8. *Sea-coast. rare.*"—Bab., as *prostrata.*

10. **angustifolia.** Lower L. deltoid, with advancing lobes from a wedge-shaped base. Cal. of Fr. with prolonged lateral angles; the larger leaf-like and without tubercles. (Spikes interrupted, nearly simple, Bab.) **a.** 7–10. *Rubbish, waste, fields.* ✓

11. **erecta.** Lower L. with advancing lobes, on a wedge-shaped base; upper lanceolate, entire. (Spikes branched, dense, Bab.) Cal. of Fr. somewhat deltoid, denticulate, hardly exceeding fruit. **a.** 7–10. *Fields.*

b. *Calyx rhomboid, thick and coriaceous. Lobes united on both sides.*

12. **Babingtonii.** Stems spreading. L. mealy: lower ovato-triangular, unequally sinuato-dentate; upper lanceolate, dentate, *often 3-lobed at the base.* Cal. of Fr. acute, toothed, tubercled, undivided. Pan. dense, many-flowered. Clusters few-flowered. Seeds compressed and shagreened. **a.** 7–9. *Sea-shore.*—Bab. *The typical form of the calyx of the fruit seems to be a square placed diagonally, with the lateral angles rounded, sometimes slightly depressed, and sometimes slightly prolonged. It is more coriaceous, and has more of an angle at the base, than* A. hastata. *It may possibly be* A. rosea γ crassifolia *of Moquin.*

13. **littoralis.** L. lineari-lanceolate, nearly entire. Cal. of Fr. rhomboid, acute (open, Bab.). **a.** 7–9. *Salt marshes.*

14. **marina.** L. oblong or ovato-lanceolate, irregularly toothed, rarely entire. (Cal. of Fr. obcordato-triangular, closed, Bab.) **a.** 7–9. *Salt marshes.*

ii. *Stem buff-coloured, nearly without stripes. Calyx of Fruit hard and thick.*

15. **arenaria** (*laciniata* of English authors). Stem herbaceous, prostrate. L. rounded or deltoideo-elliptic, sinuate. Spikes leafy. Cal. of Fr. very broad, divided almost to the base. **a.** 7–9. *Sandy shores.* Eng. Dunkirk. w. Eur.—J. W.

16. **rosea.** Stem firm and self-supporting. L. ovato-deltoid, sinuate or deeply toothed. Lateral Spikes often leafy; terminal usually long and naked. Cal. of Fr. rhomboideo-semicircular. **a.** 8, 9. *Waysides.* e. G. s. Fr.

17. **laciniata.** Stems diffuse. L. deltoid, 3-lobed, sinuate. Spikes very long and naked. Cal. of Fr. square or rhomboideo-semicircular. **a.** 7–9. s. Eur.

18. **campanulata.** Stems diffuse. L. ovato-deltoid or oblong, 3-lobed, on a wedge-shaped base; or oblong, entire. Spikes naked, very long and slender. Cal. of Fr. campanulate, ending in triangular lobes. **a.** 8, 9. s. Fr.—J. W.

19. **Halimus.** A Shrub! L. quite entire, or rarely somewhat toothed at the base, deltoideo-ovate, obtuse, mucronulate, scaly. Cal. of Fr. subrhombeo-reniform, entire. **S.** 8, 9. *Sandy shores.* s. Fr. *hardly wild.*

The following I do not know how to arrange.

20. **Bocconi.** "Shrubby at base, tufted. L. rather blunt, oblongo-deltoid, entire at base, repando- or sinuato-dentate, hoary with scales underneath, or on both sides. A few clusters in the axils of L., the rest in dense, leafless spikes. Cal. of Fr. deltoideo-hastate: middle lobe lengthened; lateral somewhat dentate. **p.** or **w.** *Clayey maritime hills.*"—Guss.

21. **platysepala.** "Smooth, green. Stem much branched. L. entire. Lower and middle L. somewhat hastate; upper oblongo-lanceolate. A few axillary clusters of Fl. below the leafless spikes. Cal. of Fr. triangular. Lobes entire, or acutely dentate below the middle. **a.** 8–10. *Open fields.* Sic."—Guss.

22. **macrodira.** "Mealy when young. Stem firm, erect. Middle and lower L. ovato-lanceolate, cuneate at base, dentate in the middle; upper lanceolate, entire. Clusters of Fl. loosely distributed in terminal spikes. Cal. of Fr. somewhat deltoideo-hastate, many times longer than the seed: the seeds and the auricles acutely and unequally toothed; the middle prolonged and entire. **a.** 8–10. *Grassy fields.* Sic. *Resembles* A. angustifolia."—Guss.

23. **elongata.** "Covered with glaucous scales. Stem long, diffuse, much branched. L. deltoideo-oblong; a few of the lower hastate, opposite; margin entire. Clusters disposed in dense, leafless, panicled, terminal spikes. Cal. of Fr. rhombeo-deltoid, nervoso-reticulate, without tubercles. **a. p.** 9, 10. *Salt marshes. Habit of* Beta Cycla."—Guss.

24. **Tornabeni.** "Covered with silvery scales. Stem nearly erect, much branched. L. on the younger branches obtuse, rhombeo-ovate, angulato-dentato-crenate; the others deltoid, somewhat acute, nearly entire. Some of the fertile Fl. axillary, nearly solitary; fertile and barren in leafless spikes. Cal. of Fr. rhomboid, with 1 or 2 obtuse teeth. **a.** 7–9. *Sandy shores.* Sic."—Guss. *I suspect this to be* A. laciniata, *to which Tenore referred it; and the following to be* A. rosea.

25. **polysperma.** "Somewhat glaucous, scaly or powdery. Stem erect. L. deltoideo-ovate, unequally sinuato-dentate, entire at base. Clusters of Fl. numerous, axillary, and somewhat approximate in terminal spikes. Cal. of Fr. rhomboid and ovate, with a narrow, irregularly toothed margin, tubercled on the back. **a.** 9, 10. *Uncultivated shores.*"—Guss.

A. farinosa and *A. flavescens* of Dum., said to grow on the sandy shores of Belgium, *A. veneta* of Willd., *A. sicula* of Ucria, are not so described as to render it possible to identify them. The latter is joined by Guss. to *A. triangularis.*

TRIBE V.

697. THELYGONUM.

1. **Cynocrambe.** Stems prostrate. L. oval, stalked. **a.** 6. *Rocks and walls.* mdt. Fr. Italy. ✓

LXXXIII. POLYGONEÆ.

Perianth inferior, 3- 5- or 6-parted. Stamens inserted in its base. Ovary of 1 cell and 1 seed. Styles 2 or 3. Fruit not bursting. Embryo inverted. L. alternate, with sheathing stipules.

698. RUMEX.

A. Flowers complete. Sepals not reflexed.
  i. Sepals strongly toothed at base. Sp. 1–7.
  ii. Sepals nearly entire. Sp. 8–16.
B. Flowers complete. Sepals reflexed. Sp. 17, 18.
C. Flowers monœcious. Sepals united. Sp. 19.
D. Flowers separate. Sepals free.
  i. Flowers polygamo-monœcious. Sp. 20.
  ii. Flowers diœcious, none of them complete.
    a. Joinings distant from calyx. Sp. 21–26.
    b. Joinings close to calyx. Sp. 27, 28.

A. *Flowers mostly complete. Sepals not reflexed. Joining of pedicel far from flower.*

i. *Sepals strongly dentate at base.*

1. **suffocatus.** Almost stemless. Sep. oblong; all beaded, dentato-ciliate. Root-L. oblong, somewhat cordate, acute. Rac. short, leafy at base. **p.** 5. *Salt marshes and rich shade.* Sardinia.

2. **maritimus.** Sep. somewhat triangular; all beaded. Setiform Teeth as long as the apex. Whorls crowded. L. lineari-lanceolate. **p.** Sm. **b.** Koch and Duby. *Marshes near the sea.* Fr. G. Br. *rare.* Also in Lorraine.

3. **palustris.** Sep. ovate, prolonged, acute; all beaded. Teeth setiform, shorter than apex. L. lineari-lanceolate. Whorls separate. **p.** or **b.** 7, 8. *Marshes, occ.*

4. **Steinii.** Sep. ovate, all beaded. Teeth setiform, shorter than apex. Whorls remote; upper leafless. Lower L. broadly oblong, cordate at base; upper lanceolate. **p.** 7, 8. *Banks of the* Maine at Frankfort. *Has the habit of* R. acutus.

5. **pratensis.** Sep. all beaded, somewhat cordate; one larger, and with larger bead; (with a small, entire, triangular point. Teeth triangular, acuminate, Bab.) Lower L. oblong, acute, cordate at base; upper lanceolate. Whorls crowded, leafless. **p.** 7, 8. *Rich meadows.* Eng. Rhine. Halle.

6. **obtusifolius.** Sep. triangulari-oblong, entire at top, one chiefly beaded. Apex beyond the teeth, oblong or lingulate. Lower L. cordate; upper lanceolate. Branches nearly erect. **p.** 7, 8. *Meadows and about villages.*

7. **pulcher.** Sep. ovato-oblong, all beaded; one with a large bead, ciliato-dentate. Root-L. fiddle-shaped. Branches divaricate. Rac. leafy. **p.** or **b.** 6. *Uncult.* Br. Fr. G. *rare.* It.

β. *divaricatus.* L. cordato-oblong, downy beneath.

A specimen I gathered at Rome in 1832 *has long, rod-like, nearly leafless racemes, and* 6 *or* 8 *long teeth on each of the Sepals. It appears to be a different species, but unfortunately the L. are wanting.*

ii. *Sepals entire or very nearly so.*

8. **acutus.** Sep. oblong, all beaded. L. oblong, cordate at base; upper lanceolate. Whorls remote, leafy. **p.** 7, 8. *Banks and uncult. In this and the following, the joining is quite at the base of the pedicel.*

9. **sanguineus.** Sep. oblong; 1, at least, beaded. Lower L. oblong, cordate at base; middle ovato-lanceolate, acute. Whorls mostly leafless. **p.** 7, 8. *Moist shade.* Br. Fr. G.

α. With bloody veins. *occ.*

10. **Hydrolapathum.** Sep. ovato-triangular. Beads oblong. Root-L. lanceolate, or ovato-lanceolate, but somewhat attenuate. *Lower Stalks flat.* Whorls somewhat crowded. **p.** 7, 8. *Still water.*

11. **maximus.** Sep. triangulari-cordate, denticulate at base, all beaded. Lower L. oblong, acute, obliquely cordate at base. (Stalks flat, with a prominent rib on each side, Koch.) Whorls leafless. **p.** 7, 8. *Still water.* G.

12. **Patientia.** Sep. subrotundo-cordate; one only with a globose bead. Lower L. cordato-lanceolate. (L.-stalks channeled, Koch.) Whorls crowded, leafless. **p.** 7, 8. *Sandstone hills.* Mutzig in Lorr. Alps of Pdm. lower Austria.

13. **crispus.** Sep. very broad, somewhat

cordate, one or all beaded. L. oblong, acute, or lanceolate, undulate. **p.** 7, 8. *Meadows and uncult.*

14. **aquaticus.** Sep. broadly cordate, without a bead. Lower L. cordato-oblong, acute, somewhat wavy; upper lanceolate. (Stalk with a narrow channel, KOCH.) Whorls crowded, leafless. **p.** 7, 8. *Moist banks.* Yorkshire. Air. G. *occ. Koch says,* "extra aquam nunquam crescit." *The British plant is, I believe, never found in the water.*

15. **domesticus.** "Sep. subrotundo-cordate, without a bead. Root and lower L. curled, oblong or broadly lanceolate, on an ovate or cordate base. Stalks flat above, with a slender marginal line. **p.** 7, 8. Banks of Elbe near Hamburg."—KOCH. aquaticus Web.

16. **alpinus.** Sep. triangulari-cordate, membranous, nearly without bead. Root-L. subrotundo-cordate. Stalks channeled. Whorls crowded, generally leafless, pedicels long. (Fl. polygamous, monœcious, BERT.) **p.** 7, 8. *Mountains, chiefly by stations for the cattle.* Scotl. Alps. Pyr. Aust. Apenn.

B. *Flowers complete. Sepals reflexed.*

17. **tingitanus.** Sep. broadly cordate, quite entire. L. hastate, ovate, acute, stalked. Whorls distant, few-flowered. **p.** 6. *Seashore.* Arles to Narbonne.

18. **bucephalophorus.** Sep. triangulari-oblong, with setaceous teeth; all beaded. L. ovate, quite entire. Whorls about 3-flowered. Stalks dilated above the joining. **a.** 3, 4. *Barren.* mdt. Fr. w. It.

C. *Flowers separate, monœcious. Sepals united.*

19. **spinosus.** Somewhat dichotomous. Div. of Cal. tipped with a recurved spine. Barren Fl. unarmed, in upper part of same cluster. L. somewhat cordate. **a.** 1–4. *Salt marshes.* Barletta. Reggio. Sic. Sard.

D. *Flowers separate. Sepals free, reflexed in fruit.*

i. *Flowers polygamous, monœcious.*

20. **scutatus.** Sep. broadly cordate, membranous, quite entire. No Bead. L. hastate, ovate, or somewhat fiddle-shaped. **p.** 5–7. *Stony hills.* m. and s. Eur.

β. ætnensis. Fl. complete, rough with hairs. Ætna.

ii. *Flowers diœcious; no complete flowers.*

a. *Joinings distant from Calyx.*

21. **amplexicaulis.** Sep. broadly cordate, somewhat beaded. Lower L. cordate, stalked, with obtuse ears parallel to midrib; upper somewhat acute, amplexicaul. Whorls crowded, few-flowered, leafless. **p.** *High.* Pyr. Cantal.

22. **nivalis.** Sep. of Fr. subrotundo-cordate, quite entire, with a deflexed callus at the base. Outer L. subrotundo-cordate; inner ovate, oblong, or hastate. Stem nearly simple, leafless or with 1 or 2 L. **p.** 7, 8. *Very high gravel.* Alps of Sw. Bav. Carn.—KOCH.

23. **Acetosa.** Sep. broadly cordate. Beads small or wanting. L. sagittate or hastate. Ears acute. Upper L. oblong. **p.** *Meadows and pastures.* R. Acetosa *of Bert.* R. hispanicus *of Koch is a garden plant.*

24. **montanus.** Sep. broadly cordate, quite entire, with a small round bead. L. hastate: lower ovate, obtuse; upper triangular, acuminate. Ears acute. **p.** 7, 8. *Mountain meadows.* Pyr. Auv. Alps. G. Apenn.

25. **intermedius.** Sepals subreniform, beaded. L. oblong or linear: lower sagittate; upper hastate. Rac. compact. **p.** 4, 5. *Clayey hills.* Palermo. Cors. s. Fr.

26. **tuberosus.** Small, ovate tubers on the fibres of Root. Sep. cordato-orbicular, with small, oblong beads. L. hastate, lanceolate. **p.** 5. *Meadows.* Nice. Verona.

b. *Joinings close to calyx.*

27. **Acetosella.** Sep. subrotundo-cordate, membranous, quite entire, without bead or scale. L. hastate, lanceolate or linear. Ears entire. **p.** 6, 7. *Sand or gravel.*

28. **multifidus.** Sep. very thin, papillose. L. hastato-lanceolate, 1-nerved. Ears palmate. **a. b.** 5, 6. Vallombrosa. Vesuvius. Messina. Ætna.

699. OXYRIA.

1. **reniformis.** L. reniform. Sepals 4. **p.** 7, 8. *High mountains.*

700. POLYGONUM.

A. Root fleshy. Stem simple, with a single, spike-like, terminal raceme. Sp. 1, 2.

B. Root fibrous. Stem branched. Stipules cylindrical, undivided. Flowers in spike-like racemes.

i. Stamens 5. Sp. 3.

ii. Stamens 6.

a. Styles distinct. Sp. 4–6.

b. Styles united below. Sp. 7–11.

iii. Stamens 8. Flowers panicled. Sp. 12.

C. Fl. axillary. Stem branched, diffuse. Ochreas or Stipules 2-lobed.

i. Annual, herbaceous. Sp. 13–15.

ii. Perennial, somewhat woody. Sp. 16–21.

D. Stem twining! L. cordato-sagittate. Sp. 22, 23.

E. Stem not twining. L. cordato-sagittate. Cotyledons contorto-conduplicate. Sp. 24, 25.

A. *Root fleshy. Stem simple, with a single, spike-like, terminal raceme. Styles* 3.

1. **Bistorta.** L. (ovate, Sm.) (oblong, Bert.) (ovato-lanceolate, Duby) (somewhat cordate, Koch) wavy, attenuate. **p.** 6, 7. *Moist meadows. occ.*

2. **viviparum.** L. lanceolate. Margin revolute, with copious prominent veins. **p.** 6–8. *Mountain pastures. Not common.*

B. *Root fibrous. Stem branched, bearing many spike-like racemes. Styles usually* 2. *Stipules* (*or Ochreas*) *sheathing, undivided.*

i. *Stamens* 5.

3. **amphibium.** Styles united half-way. Rac. oval. Stem rooting at base. L. ovato-lanceolate. **p.** 6–8. *Water or wet places.*

ii. *Stamens* 6.

a. *Styles distinct.*

4. **lapathifolium.** Rac. oblong, on glandular stalks. Seeds hardly covered by calyx. Stem erect, swelling at knots. L. oblongo-lanceolate. Lower Stipules not fringed. **a.** 7–9. *Rich moist.*

β. incanum. L. hoary beneath.

5. **laxum.** Rac. slender, on glandular stalks. Seed completely covered by calyx. *Stem often prostrate.* L. lanceolate, wavy. Stipules with a short fringe. **a.** 7–9. *Damp gravelly.*—Bab.

6. **tenuiflorum.** "Rac. filiform, on glandular stalks, nodding. Stem ascending. L. lanceolate, with glandular dots beneath. Stipules sometimes with a short fringe. Seeds pitted. **a.** 7–10. *Moist.* Abr. Palermo."—Guss.

b. *Styles united below.*

7. **Persicaria.** Raceme oblong. Stalks smooth. Stems ascending, swelling at the knots. L. lanceolate. Stipules hairy, with a short fringe. **a.** 7–9. *Wet.*

8. **serrulatum.** "Styles nearly distinct. Rac. filiform, on smooth stalks. Cal. without glands. Stem ascending. L. lanceolato-linear, broad at base, serrulato-ciliate, minutely granulate beneath. Stipules with a long fringe. **a.** 6–9. *Wet.* Sarzana. Pal."—Bert.

9. **minus.** Stamens 6 (5, Koch). Rac. filiform, nearly erect. Stalk smooth. Cal. without glands. Stem decumbent. L. lineari-lanceolate, flat. Stipules with adpressed hairs and a copious fringe. **a.** 8, 9. *Moist, occ.*

10. **mite.** Rac. filiform, lax. Stalks smooth. Cal. without glands. Stem ascending. L. lanceolate. Stipules with scattered hairs and a long fringe. **a.** 7–10. *Wet. occ. Taste not pungent.*

11. **Hydropiper.** Rac. filiform, nodding. Stalks smooth. Cal. covered with glandular dots. Stem erect. L. lanceolate, wavy, ciliate. Stipules with a few adpressed hairs and a short fringe. **a.** 8, 9. *Wet.*

iii. *Stamens* 8.

12. **alpinum.** Erect. Fl. in a terminal panicle. L. lanceolate, wavy, ciliate, downy beneath. Ochreas hairy, very short. **p.** 7, 8. *Rich mountain meadows.* Val. Urseren. Uri. Vall. it. Alps. Monte Orsano in Apenn.

C. *Flowers axillary. Stamens* 8. *Styles* 3. *Ochreas* 2-*lobed.*

i. *Annual, herbaceous.*

13. **aviculare.** L. elliptic or lanceolate. Stipules about 6-nerved. Branches leafy to the end. Seeds ruguloso-striolate, shorter than calyx. **a.** 7–10. *Fields and uncult.*

14. **Bellardi.** L. elliptical; upper lanceolate. Ends of Bracts leafless. Stipules about 6-nerved. Seeds ruguloso-striolate. *Probably* P. pulchellum *of Lois.* **a.** 6, 7. *Fields.* Trieste. Fr.

15. **Raii.** L. elliptico-lanceolate. Branches leafy to end. Stipules about 6-nerved. Seeds exceeding calyx. **a.**? 8, 9. *Sandy shores.* w. and s. Eng. w. Fr.

ii. *Perennial, somewhat woody.*

16. **maritimum.** Prostrate. L. coriaceous, elliptic or lanceolate, glaucous. Ochreas

large, many-nerved (12 *or more*). Lower L. twice as long as interknot. Branches leafy to the end. Seeds quite smooth. **w.** 5, 6. *Sandy shores.* s. Eng. *very rare.* Fr. It.

17. **flagellare.** Smooth. Stem prostrate. L. lineari-lanceolate, acuminate, spreading, having close, straight nerves; lower hardly as long as interknot. Ochreas many-nerved (few-nerved, Bert.). Lobes acuminate. Seeds finely granulate. **w.** 6–9. Rome. K. Naples. P. flagellare *of Lois. seems to be the same as his* arenaria. *It is perhaps a distinct species.*

18. **equisetiforme.** Erect. Branches rod-like, nearly leafless. Stipules with many nerves and many teeth. Rac. long, lax. **w.** 7–9. *Gravelly beds of torrents.* Sard. Cors.

19. **elegans.** Erect. Branches forming a spreading panicle. L. lanceolate, rough. Stipules many-nerved. Div. acuminato-setaceous. Rac. lax, leafless. Fl. usually in pairs. —Bert. **w.** 6. Martina and Ginosa in Iapygia. Basilicata.

20. **herniarioides.** Whole Plant scabrous. Stem prostrate. L. obovato-lanceolate. Ochreas with few nerves (*about* 5). Fringe setaceous at top. Seeds quite smooth. **w.** 7–9. Sicily.

21. **controversum.** Smooth. Stem prostrate. L. oblongo-lanceolate, straight: lower obtuse; upper acute. Stipules fringed. Nerves few. Rac. long, terminal. **w.** 6–10. Palermo.

D. *L. cordato-sagittate. Stem twining! Cotyledons flat.*

22. **Convolvulus.** Segm. of Cal. keeled. Stem angular. **a.** 6, 7. *Fields and hedges.*

23. **dumetorum.** Segm. of Cal. with a winged keel. Stem slightly striate. **a.** 7, 8. *Hedges and thickets.* m. Eur. *rare in Eng.*

E. *L. sagittato-cordate. Stem erect. Cotyledons contorted.*

24. **Fagopyrum.** Axillary Rac. simple; terminal corymbose. Edges of Seed quite entire. **a.** 7, 8. *Escapes.*

25. **tataricum.** Axillary Rac. simple; terminal disposed in leafless, interrupted spikes. Edges of Seed repando-dentate. **a.** 7, 8. *Sandy fields. Become a weed in Han. and Westph.*

LXXXIV. THYMELEÆ.

Perianth inferior, tubular, 4- or 5-cleft. Anthers inserted at the mouth or in the tube, twice as many as the divisions of the perianth, opening by two longitudinal clefts. Ovary of one cell and one seed. Fruit a Nut or Drupe.

701. STELLERA.

1. **Passerina.** L. linear. Fl. 4-cleft, sessile, axillary. Bracts twice as long as fruit. **a.** 6, 7. *Fields.* m. and s. Eur.

2. **pubescens.** "L. linear, downy. Fl. solitary or in pairs, approximate in spikes. Fr. (at least the upper) twice as long as bract. **a.** 8–10. *Clayey fields.* Sic."—Guss.

702. PASSERINA.

1. **dioica.** Fl. axillary, in pairs, tubular. Segm. lanceolate. Bracts 0. L. lineari-lanceolate, acute, crowded, dotted beneath. **s.S.** Pyrenees.

2. **nivalis.** Fl. axillary, solitary, tubular. Segm. ovate, furnished with bracts. Stem prostrate, twisted. L. shining, lineari-lanceolate, obtuse. **s.S.** *Very high.* Pyr.

3. **Thymelea.** Fl. axillary: lower solitary; upper clustered. Tube of Perianth very long, segments linear. Branches simple. L. ovato-lanceolate, acute, *glaucous.* **s.S.** 5. *Rocky hills.* mdt. Fr.

4. **hirsuta.** Fl. axillary, clustered. Cor. somewhat campanulate. Segm. ovate. L. ovate, fleshy, woolly on inside, smooth without. **s.S.** 10–5. *Coasts.* mdt. Fr. w. It. Sic.

703. DAPHNE.

A. *Flowers in axillary clusters or racemes.*

1. **Mezereum.** Fl. axillary, sessile, in small clusters, opening before the L.! L. lanceolate, attenuate, deciduous. **S.** 3, 4. *Shady hills.* s. Eng. *rare.* G. Fr. It.

2. **Tartonraira.** Fl. in axillary spikes or clusters. L. obovate, coriaceous, many-nerved: these and Branches silky. Cor. hairy: segments ovate. **s.S.** 4, 5. *Rocky.* mdt. Fr. It.

3. **Tommasii.** Stems erect, branched. L. coriaceous, lineari-lanceolate, somewhat spatulate, rather acute, quite smooth. Fl. axillary, 2 or 3 together, bracteate, sessile. Cor. hairy, tubular. Segm. ovate. **S.s.** Cors.—Duby. *I place this in* Daphne *because Bert. considers it a var. of* Tartonraira : *and the Fruit of this is fleshy.*

4. **Laureola.** Fl. in simple, axillary, drooping racemes. L. large, obovato-lanceolate, evergreen. **s.S.** 3, 4. *Woods and hills. occasionally.*

B. *Flowers in terminal clusters.* (*The branch sometimes grows beyond them, and they become at last more or less lateral.*)

5. **alpina.** Segm. of Cor. lanceolate, acuminate. Drupe oblong. Branches spreading. L. thin, obovato-lanceolate. **s.S.** 4, 5. *Mountain rocks.* Pyr. Cev. Alps. Apenn.

6. **glandulosa.** Segm. of Cor. lanceolato-linear, acuminate. Upper part of erect Stem much branched. L. coriaceous, oblongo-obovate, granulato-glandular beneath. **s.S.** 5–7. *Calc. mountains.* it. Tyr. Apenn. Cors. *Not in Koch.*

7. **collina.** Cor. hairy, *externally pink.* Div. ovate, obtuse. Stem branched at top. L. obovato-lanceolate, smooth and shining above, hoary beneath. **S.** 3, 4, and sometimes in Autumn. Valley of Isonzo. Tuscany. Rome. K. Nap. D. collina *of English gardens, said to come from Greece, is not the Italian plant; yet Sibthorp, the original authority, found his plant in Italy.*

8. **blagayana.** Cor. yellow, hairy externally. Segm. ovate. L. oblongo-obovate, smooth on both sides. Div. of Cor. equalling one-third of tube. **s.S.** 5. *Mountain woods* on the St. Lorenziburg in Carn., and the Gostinger Berg near Gratz.

9. **Cneorum.** Cor. hairy, *pink.* Tube cylindrical, nerved. Div. elliptic, equalling two-thirds of tube. Bracts very short, truncate. Stems tufted, decumbent. L. lineari-cuneate, with short mucro, hairless. **s.S.** 5–8. *Dry mountain pastures.* s. Sw. Tyr. Pyr. Apenn. Cev. Jura and on the sands. s. w. Fr.

10. **striata.** Cor. smooth, *pink.* Div. elliptic, equalling two-thirds of tube. Bracts ovate, pointed, reaching to one third of tube. L. lineari-cuneate, with short mucro, hairless. **s.S.** 7, 8. *Rocky mountains.* Alps.—Koch.

C. *Flowers in a terminal panicle.*

11. **Gnidium.** Stem erect, branched. L. lanceolato-linear, alternate, mucronate, smooth. **s.S.** Summer. *Dry.* s. Fr. It.

LXXXV. LAURINEÆ.

Perianth inferior, 4–6-parted. Stamens 6 or 12, inserted at the base of the segments. Anthers adnate to filaments, with 2 cells, opening by a valve from the base to the summit. Ovary a Drupe, or Berry, with one seed.

704. LAURUS.

1. **nobilis.** L. oblongo-lanceolate, veiny, evergreen. Fl. 4-fid, (diœcious, Duby,) in axillary clusters. **l.S.** 4, 5. s. Alps. Austrian shore.

LXXXVI. SANTALACEÆ.

Perianth superior, 3–5-cleft. Stamens 4 or 5, inserted on the base of the segments. Ovary of one cell and 2 or 4 seeds, pendulous from near the base of a central placenta.

705. THESIUM.

A. *With 3 bracts to each flower. Flowers extending to the ends of the branches.*

i. *Calyx of Fruit rolled in to the base, not half as long as fruit.*

1. **intermedium.** Root creeping. Stems ascending. Pan. pyramidal. Branches spreading. L. lineari-lanceolate, acute, 3-nerved. **p.** 6–8. *Hill meadows.* G. e. Fr.

2. **montanum.** Root descending. Stems several, erect. Pan. pyramidal. Branches spreading. L. lineari-lanceolate, finely acute,

3–5-nerved. **p.** 7, 8. *Hill meadows and woods.* G.

3. **divaricatum.** Root descending. Stems several, ascending. Pan. pyramidal. Branches spreading. L. linear, acute, mostly 1-nerved. Bracts somewhat asper on margin. Apophysis longer than half the drupe. **p.** 7, 8. *Rough mountains.* Trieste and Fiume.

4. **linophyllum.** Root descending. Stems many, prostrate. Fl. in racemes. Stalks as long as flowers. Margin of Bracts denticulate, asper. Apophysis shorter than half drupe, *sometimes fleshy.* Bracts of upper Fl. shorter than fruit. **p.** 6–8. *Calc. pastures.* Eng. Fr. Vienna. *This is* T. humifusum *of Koch and of the French botanists; but it is the* T. linophyllum *of Eng. Bot., and no other species seems to have a better claim to the name. The degree in which the calyx is rolled in varies considerably.*

5. **ramosum.** Like Sp. 4, except that the L. are somewhat 3-nerved, and the middle bract always exceeds the fruit. **p.** 6, 7. *Dry hill pastures.* Vienna. Sty.

6. **humile.** Root descending. Stems several, ascending. Fl. in racemes, nearly sessile. Margin of Bracts denticulato-asper. Apophysis shorter than half drupe. **p.** or **b.** 6, 7. *Fallow.* lower Aust. It.

ii. *Calyx of Fruit rolled in only at top; remaining about as long as fruit.*

7. **pratense.** Root fusiform. Stems many. Fruit-branches horizontal. Fr. subglobose, not longer than the stalk. **p.** 6, 7. *Hill meadows.* G.

8. **tenuifolium.** Root fusiform. Stems many. Fr.-stalks ascending in all directions. L. long linear. Fr. globose.—Koch. **p.** 6, 7. *Stony pastures.* Banks of Steyer in lower Austria.

9. **alpinum.** Root fusiform. Stems many. Fr.-stalks nearly erect, secund. Fr. subglobose, longer than stalk. **p.** 6, 7. *Heaths and pastures.* Fr. G. It. Sw.

B. *Bracts single: upper enlarged, sterile.*

10. **ebracteatum.** Root creeping. Rac. simple. Fr. ovoid, coriaceous, stalked. **p.** 6, 7. *Grassy hills.* n. G.

11. **rostratum.** Root præmorse. Stems many. Rac. simple. Drupe sessile, subglobose. **p.** 6, 7. m. and e. Alps.

706. OSYRIS.

1. **alba.** L. sessile, alternate, lineari-lanceolate, quite entire. **w.** 4, 5. *Rocks and barren.* s. Fr. Trieste. It.

LXXXVII. ELÆAGNEÆ.

Perianth inferior, 2–4-cleft. Stamens inserted in the throat, as many, or twice as many, as the segments of the perianth. Anthers of 2 cells, bursting by two longitudinal clefts. Fruit drupe-like, composed of a Nut imbedded in the fleshy, persistent calyx.

707. ELÆAGNUS.

1. **angustifolia.** L. lanceolate, acute, quite entire, with silvery scales on both sides. Fl. axillary, stalked. **S.** 5, 6. *Warm barren hills.* Osero. Provence.

708. HIPPOPHAE.

1. **rhamnoides.** L. lanceolate. **S.** 4, 5. *Sandy shores,* e. Eng. *and beds of torrents,* s. Fr. G. It.

LXXXVIII. BALANOPHOREÆ.

Flowers separate. *Barren.* Perianth superior. Divisions as many as stamens. Stamens 1–4. *Fertile.* Germen of 1, or of 2 unequal cells. Ovulum solitary, pendulous. Fruit coriaceous. No Leaves.

709. CYNOMORIUM.

1. **coccineum.** Stem scaly. Amentum cylindrical. Scales ovate, retuse. **p.**? 4, 5. *Sandy shores.* Isl. of Ronciglio at Trapani. Lampedusa. *Parasitic, Fungus-like.*

LXXXIX. CYTINEÆ.

Flowers separate. Perianth superior, 4–5-parted. Stamens 8 or more, growing on a central column. Ovary of one cell, with many seeds, on parietal placentas. No Leaves.

710. CYTINUS.

✓ 1. **Hypocistis.** **p.** 5. s. Fr. It. *Parasite on roots of Cisti.*

XC. ARISTOLOCHIÆ.

Flowers complete. Perianth superior, 3-cleft or obliquely truncate. Stamens 6–12, inserted on the top of the ovary, sometimes connate with style and stigma. Ovary 3–6-celled, with numerous seeds, on central placentas.

711. ARISTOLOCHIA.

A. *Flowers solitary.*

1. **altissima.** Stem shrubby, climbing! L. perennial, quite smooth, cordato-oblong. Lip of Cor. short, retuse. **w.** 5, 6. *Hedges.* e. Sicily.

✓ 2. **rotunda.** Root nearly globose. Stem nearly simple, herbaceous, erect. L. somewhat triangulari-cordate, on very short stalks. Lip of Cor. emarginate. Caps. globose. **p.** 4, 5. *Dry bushy.* s. Fr. Trieste. It.

✓ 3. **pallida.** Root nearly globose. Stem simple, somewhat erect. L. triangulari-cordate, on stalks which exceed flower-stalks. Lip of Cor. acute. Fr. oval, attenuate. **p.** 3, 4. *Bushy.* inner Carn. Trieste. It.

✓ 4. **longa.** Root long, simple, cylindrical. Stem branched, herbaceous. L. cordate, quite entire, stalked. Lip of Cor. somewhat acute. Caps. oval, attenuate. **p.** 5. *Fields, vineyards.* s. Fr. Sic.

5. **Pistolochia.** Roots bundled. Stems numerous, branched, decumbent. L. cordate, crenate, rough, on short stalks. **p.** 5–9. *Barren stony.* mdt. Fr.

B. *Flowers clustered.*

6. **Clematitis.** Root creeping. Stem simple, erect. L. cordate, stalked, smooth. **p.** 5, 6. *Borders, vineyards.* Eng. *very rare.* m. and s. Europe. ✓

712. ASARUM.

1. **europæum.** L. reniform. **p.** 3, 4. *Shade.* Eng. *very rare.* m. and s. Eur. *occasionally.* ✓

XCI. EMPETREÆ.

Flowers separate, inferior. Petals 3, alternating with sepals. Stamens 3, free, opposite to sepals, inserted on receptacle. Ovary on a fleshy disc, 3–6-celled. Cells 1-seeded. Stigma with as many rays as cells to ovary.

713. EMPETRUM.

✓ 1. **nigrum.** L. linear-obtuse; their margins meeting in a white line beneath. Berries black. **s.S.** 5. *Mountain heaths. Not in floras of Rome or Naples.*

XCII. EUPHORBIACEÆ.

Flowers separate (*but in* Euphorbia *the barren flowers are placed round the single fertile flower, so as to give some appearance of a single complete flower*). Perianth inferior, sometimes wanting. Ovary usually 3-celled, with one or two suspended seeds in each cell.

714. CROTON.

1. **tinctorum.** L. ovato-rhomboid, repand, entire at base, hoary on both sides. Fertile Fl. on stalks, generally forked, at the base of barren spikes. Caps. squamato-pubescent, drooping. **a.** 7, 8. *Coasts* of Mdt. *Fl. yellow.*

715. RICINUS.

1. **communis.** L. peltato-palmate. Segm. lanceolate, serrate. Stigmas 3, forked. Caps. prickly. **S.** 5, 6. *Rich moist thickets on the coast.* Sic.

2. **africanus.** L. peltato-palmate. Lobes lanceolate, dentato-serrate. Stigmas 6. Caps. prickly. **S.** 4–6. *Bushes on coast.* Messina. —Guss.

716. BUXUS.

1. **sempervirens.** L. ovate. Stalks hairy on the margin. Anthers ovato-sagittate. **S.** 4, 5. *Dry calc. hills.* Eng. *rare.* m. and s. Europe.

717. ANDRACHNE.

1. **telephoides.** Stems procumbent. L. stalked, ovate, shortly acuminate, smooth. **a.** 5, 6. *Open barren.* Isl. of Brioni.

718. EUPHORBIA.

The habit of the species of *Euphorbia* often depends a good deal on the number of the L.; but individuals vary considerably in this respect, and vary so gradually, that we cannot make all the use of this character which might have been expected. I have, however, noticed this in many instances; calling the L. *scattered,* when those on the middle of the flowering-stem are usually more than one-third of the length of the L. apart; *approximate,* when from one-third to one-eighth; and *crowded,* when this space is less than one-eighth of the L. In the lower part of the stem the L. are usually shorter than the others; in the upper part the spaces are longer. Where there are barren shoots, the L. upon them are always closer together. The L. in the alternate-leaved Euphorbias are generally unequally spaced, which adds to the difficulty of resting on this character. In the annual species the L. often fall off while the plant is in flower. In others, only the lower L. fall off.

A. L. with stipules, opposite. Flowers axillary. Sp. 1–4.

B. L. without Stipules, alternate. Flowers in a sort of umbel. Bracts separate. Glands entire.

  i. Seeds reticulate or pitted. Sp. 5, 6.
  ii. Seeds rough with raised points. Sp. 7, 8.
  iii. Seeds smooth. Capsule sessile. Sp. 9.
  iv. Seeds smooth. Capsule stalked.
    a. Capsule warty.
      * Rays of Umbel 3–6.
        † Warts not filamentous.
          ‡ Root annual. Sp. 10–12.
          ‡‡ Root perennial. Plant herbaceous. Sp. 13–20.
          ‡‡‡ Plant shrubby. Sp. 21, 22.
        †† Warts filamentous. Sp. 23–25.
      ** Rays more than 6. Sp. 26.
    b. Capsule without warts. Sp. 27–30.

C. Bracts united. Glands various. Otherwise as **B.** Sp. 31–36.

D. Glands horned. Otherwise as **B.**

  i. Seeds smooth.
    a. Capsule with raised points on the back.
      * Rays more than 5. Sp. 37–43.
      ** Rays 3–5. Sp. 44–47.
    b. Capsule quite smooth. Sp. 48–54.
  ii. Seeds not smooth.
    a. Capsule not smooth. Sp. 55–62.
    b. Capsule smooth.
      * Plants annual. Sp. 63–66.
      ** Plants shrubby. Sp. 67, 68.

E. L. opposite, without Stipules. Sp. 69.

A. *L. with Stipules! Plant annual. Stem forked. L. opposite. Capsule smooth.*

1. **Preslii.** Seeds wrinkled. Fl. clustered, terminal. Stem nearly erect. L. oblong. **a.** 6–8. *Cult.* Palermo, Termini, Sic.

2. **maculata.** Fl. axillary, solitary. L. obcordato-oblong. **a.** 8, 9. *Fields.* Verona. *Bert. joins this to* Preslii, *under the name of* trinervis.

✓ 3. **Chamæsyce.** Seeds wrinkled. Fl. axillary, solitary. Stem prostrate. L. obliquely subrotund. **a.** 6–8. *Dry coasts* of Mdt.

β. canescens. Hairy. L. crenate.

✓ *γ. massiliensis.* Hairy. L. with acute serratures.

δ. perforata. L. with pellucid dots.

✓ 4. **Peplis.** Seeds smooth. Fl. axillary, solitary. Stems prostrate. L. semicordate. **a.** 6–9. *Warm sandy shores.*

B. *Bracts separate. Glands entire. Flowers in a sort of umbel.*

i. *Seeds pitted or reticulate.*

✓ 5. **ptericocca.** Umbel of 3–5 rays, dichotomous. Caps. with 6 wings. **a.** 4, 5. *Fields.* Ajaccio. Sic.

✓ 6. **helioscopia.** Umbel of 5 rays, trifid, forked; no accessory rays. Caps. smooth, obtusely 3-edged, stalked. Bracts and L. obovate, serrate. L. scattered, caducous. **a.** 6–8. *Cult.*

ii. *Seeds somewhat rough with raised points.*

✓ 7. **pilosa.** Umbel of 5 rays, trifid, forked. Caps. shagreened and villous. Bracts ovato-rhombic, oblique. L. lineari-oblong, *somewhat cordate at base,* serrulate, *villous,* approximate. **p.** 5–7. *Moist.* Sic. Coasts of mdt. France.

β. paniculata, Lois. L. nearly smooth.

8. **denudata.** Umbel of 5 rays, trifid, forked. Caps. with a few small, hemispherical warts. Bracts elliptic, obtuse. L. lanceolate, somewhat narrowed at base, serrulate. **a.** 6. Apulia.—Bert.

iii. *Seeds smooth. Capsule sessile.*

9. **akenocarpa.** Rays 5, forked; no accessory rays. Bracts ovate, serrulate. L. obovate, serrate. Caps. somewhat muricate or smooth. **a.** 4, 5. *Moist clayey fields.* Sic. Calabria.—Guss.

iv. *Seeds smooth. Capsule stalked.*

a. *Capsule warty.*

* *Umbel with* 3–6 *rays.*

† *Warts not filamentous.*

‡ *Root annual.*

✓ 10. **platyphylla.** Warts nearly hemispherical. Rays 3–5, trifid, cloven. Accessory Fl.-stalks numerous. Bracts triangulari-ovate, mucronate, serrulate. L. obversely lanceolate, somewhat cordate at base, serrate, approximate. **a.** 6–9. *Shady.*—Koch.

✓ 11. **stricta.** Warts shortly cylindrical. Rays 3–5, trifid, cloven. Bracts somewhat triangulari-ovate, mucronate, serrulate. L. obversely lanceolate, serrate, approximate. **a.** 6, 7. *Fields.*—Koch.

12. **squamigera.** Rays 5, trifid, forked. Warts scale-like. Bracts subrotund. L. ovato-lanceolate, acuminate, serrulate, scattered. **a.** 5. *Moist.* Toulon.—Lois.

‡‡ *Root perennial.*

13. **pyrenaica.** Rays 1–3, undivided. Warts scattered, obtuse, very unequal. Bracts elliptic, obtuse. L. oval, the lower attenuate. Root horizontal, bearing at top several stems. **p.** 7. *Calc. mountains.* Valley of Aspe, lower Pyr.—Jord.

✓ 14. **dulcis.** Warts unequal, obtuse. Rays 5, forked. Bracts triangulari-ovate, serrulate. Floral L. lanceolate. L. lanceolato-oblong, obtuse, on short hafts, somewhat approximate. Root horizontal. **p.** 4, 5. *Shade.* s. and m. Europe.

✓ *β. purpurata.* Caps. without hairs. E. dulcis *of Bert. is* E. verrucosa.

✓ 15. **angulata.** Rays 5, erect, simply forked. Warts of Fr. nearly hemispherical. Bracts somewhat triangulari-ovate, serrulate. Floral L. ovate. L. oblong, upper part serrulate; upper sessile, scattered. Root horizontal. **p.** 5, 6. *Woody hills.* Aust. Mor.

16. **carniolica.** Rays 5, nodding, simply forked. Warts nearly hemispherical. Bracts all rounded at base, somewhat stalked, as well as upper L. L. obtuse, quite entire. Root horizontal. **p.** 4, 5. *Warm open hills.* Carn. s. Tyrol.

17. **Apios.** "Rays about 5, forked. Warts obtuse. Bracts rhomboid, finely serrulate, as well as the oblong L. Root tuberous, cerviculate. **p.** 5. *Clay.* Lucania."—Bert.

✓ 18. **hiberna.** Rays 6, twice forked. Accessory Rays numerous. Glands reniform. Caps. always erect. Warts cylindrical, obtuse. Bracts ovate. L. ovato-oblong, obtuse, approximate. **p.** 6. *Thickets.* Irel. Cors. Auv. Pyrenees.

✓ 19. **verrucosa.** Rays 5, erect, trifid, forked. No Accessory Rays. Warts short, cylindrical. Bracts elliptic, obtuse, somewhat stalked. L. oblongo-ovate, serrulate, nearly sessile, scattered. Stems many. **p.** 5, 6. *Waysides and hedges.* s. G. Fr. Sw. It.

β. flavicoma. Floral L. and Bracts yellowish.

20. **orientalis.** Rays 5, trifid, forked. Accessory Rays numerous. Warts branched. Bracts ovato-subrotund. L. lanceolate, quite entire, *smooth, glaucescent.* **p.** 6–8. *Thickets, &c., at foot of mountains.* Sic. Apul. Cal.

‡‡‡ *Plant shrubby.*

21. **spinosa.** Much branched from base. Old Branches spinescent. Bracts ovate. Rays 2–5, generally undivided. No Accessory Rays. L. approximate. **w.** 6, 7. *Stony.* Prov. It.

22. **fruticosa.** Erect. Branches not spinescent. Bracts obovate. Rays 5, trifid, cloven. **w.** 3, 4. *Calc. hills.* Sic.

†† *Warts filamentous.*

23. **fragifera.** Rays 5, simply forked. Bracts ovato-subrotund. L. oblong or lanceolate, sessile, scattered. Stems many. **p.** 4, 5. *Rough hills.* Carn. Austrian shore.

24. **epithymoides.** Rays 5, erect, trifid, forked. No Accessory Rays. Bracts elliptic, obtuse, somewhat stalked. L. oblong, sessile, scattered. Stems many. **p.** 5, 6. *Rough woody hills.* s. G.

25. **micrantha.** (Warts filament-like, Koch.) "Rays 3, forked. Caps. with three deep furrows. Bracts cordate. Seed with a sharp ending, and without any dorsal line. **a.** ? 7, 8. *Dry.* Sw. Heidelberg."—Rchb.

** *Rays more than* 6.

26. **palustris.** Rays many, trifid, forked. Warts shortly cylindrical. Bracts elliptic, obtuse, attenuate at base. L. lanceolate, hairless, sessile. **p.** 5, 6. *Moist meadows and banks.* Germany.

b. *Capsule without warts, but sometimes with minute raised points.*

27. **procera.** Rays 5 or 6, trifid, forked. Caps. shagreened, hairless. Seeds smooth. Bracts oval. L. oblongo-lanceolate, serrulate above the middle, pubescent, approximate. **p.** 6, 7. *Moist woods.* s. G.—Koch.

28. **coralloides.** Rays 5; accessory flower-stalks numerous. Caps. very hairy, quite even. Seeds ovate. Bracts ovate. L. lanceolate, nearly entire, scattered. **p.** 5, 6. *Moist shade.* Sic.

29. **gerardiana.** Rays many, dichotomous. Bracts triangulari-ovate. L. lineari-lanceolate, acuminato-cuspidate, approximate. Margin revolute, entire. Stems many. **p.** 6, 7. *Barren.* w. G. Sw. Fr. It. *According to Bertoloni, the Glands are entire, tridentate, or slightly crescent-shaped, and the Capsule is sometimes granular and sometimes smooth.*

β. saxatilis. Dwarf. L. oblong. Mt. Ventous.

30. **pannonica.** Rays many, once-forked. Glands truncate. Young Caps. covered with thick, jointed hairs. Bracts broad ovate. L. *glaucous,* lanceolate, acute. Margin flat, finely crenulate at top. Upper L. broader. Stems many. **p.** *Fields and borders.* Vienna.

C. *No Stipules. Bracts united. Umbel of many rays, forked, with accessory flower-stalks below the umbel. L. crowded.*

31. **melapetala.** Caps. somewhat villous. Seeds ellipsoid, smooth. Glands subrotund, *dark purple.* Bracts large, 5 *or* 6 *lines in length,* half united, forming a cup. L. lanceolate. **w.** 1–3. *Woody.* Palermo. Cef.—Guss.

32. **Characias.** Caps. villous. Seeds ellipsoid, smooth. Glands truncate, *dark purple.* Bracts small (3 or 4 lines in length, Guss.), half united, nearly flat. L. lanceolate, quite entire. **w.** 2–4. *Coasts* of Mdt.

33. **eriocarpa.** Caps. oblong, 3-edged, very villous. Seeds smooth, ellipsoid. Glands truncate, denticulate. Bracts small, half united, campanulate. L. narrow lanceolate, acute, downy. **w.** 3–5. *Hedges.* It. *occ.*

34. **Wulfenii.** Caps. densely villous. Seeds smooth. Glands lunate, *yellow.* Bracts small, half united, forming a cup. L. lanceolato-linear, quite entire. **p.** 4, 5. *Stony.* Austrian shore.

35. **amygdaloides.** Rays sometimes only 5. Caps. hairless, rough with fine dots. Glands lunate. Seeds smooth. Bracts united, flat. Floral L. ovate; others obovato-oblong. Stem single, simple. **p.** 4, 5. *Woods.*

36. **semiperfoliata.** Caps. even. Glands horned. Bracts small, half united, somewhat concave, somewhat reniform. Rays 4–16. L. obovato-oblong, quite entire. Seeds with a few black points. **w.** 5, 6. Trinità, Cors. Gennargentu, Sardinia.

D. *No Stipules. Bracts separate. Glands linear, horned.*

i. *Seeds smooth.*

a. *Capsule with raised points on the back.*

* *Rays always more than* 5.

[In *dendroides,* and perhaps in *cuneifolia,* the Glands are rather obcordate than crescent-shaped. In *serrata,* and, as it appears to me, in *Paralias,* they are more properly truncate and toothed.]

37. **tomasiniana.** "Stem erect. L. sessile, cordato-lanceolate, cuspidate, dilated at base. Bracts cordato-triangular. Rays 7–15, cloven. Accessory Rays numerous. Glands slightly crescent-shaped, obtuse. Caps. rough on the angles. **p.** 6. *Calc. mountains.* Trieste."—Bert.

38. **virgata.** "Rays many, repeatedly forked. Backs of the Hunches rough with dots. L. lineari-lanceolate, gradually narrower from the middle upwards, quite entire, smooth, dull, approximate. Bracts deltoideo-ovate, broader than long. Root descending. Stems many. **p.** 5, 6. *Meadows and roadsides.* s. e. Ger."—Koch.

39. **lucida.** Like Sp. 38, except that L. are shining and Root creeps horizontally. **p.** 7, 8. *Moist meadows and osier-grounds.* Sil. Moravia.—Koch.

40. **salicifolia.** "Rays many, repeatedly forked. Backs of the Hunches rough with dots. L. lanceolate, attenuate at each end, quite entire, densely pubescent, approximate. Bracts deltoideo-ovate, broader than long. Root creeping. **p.** 5, 6. *Meadows and waysides.* lower Aust."—Koch.

✓ 41. **Esula.** "Rays many, repeatedly forked. (Accessory Rays numerous, Bert.) Backs of Hunches finely dotted. L. lanceolate or lineari-lanceolate, attenuate, hairless. Margin rough towards the top. Lower L. somewhat stalked, rather approximate; those of the branches narrower. Bracts deltoideo-ovate, broader than long. Root creeping. **p.** 6–8. *Meadows and willow thickets. occ.*"—Koch.

42. **Triumfetti.** "Stem erect. L. lanceolato-linear, lengthened, narrower at each end, acute. Margin cartilaginous. Rays 5–15, forked. Accessory Rays numerous. Bracts rhombeo-ovate. Glands with long horns. Caps. rough on the angles. **p.** 5, 6. *Pine-woods.* Rav."—Bert.

✓ 43. **Cyparissias.** Rays once or twice forked. Hunches rough on the back with small dots. L. strictly linear, quite entire, somewhat crowded; those of the branches very narrow. Bracts deltoideo-semicircular, broader than long. Root creeping. **p.** 4, 5. *Barren fields and waysides.*

** *Rays not more than* 5.

44. **saxatilis.** Rays 5, once forked. Horns of Glands short, obtuse. Caps. with thin keels. Bracts obtuse, mucronate, somewhat cordate. L. *glaucous,* smooth, quite entire: lower lineari-oblong, crowded: upper elliptic. Root descending. Stems many. **p.** 5, 6. *Stony hills.* lower Aust. Sty. Carn. Sette Communi.

45. **ramosissima.** Rays 3, dichotomous. Bracts cordato-reniform, mucronate. Seeds smooth, grey with dark dots. L. ovate, very finely serrulate. Stem much branched. **p.** 6, 7. Hyères.—Lois.

46. **serrata.** Rays 3–5. No Accessory Rays. Glands hardly lunulate. Caps. nearly smooth. Bracts dentato-serrate. L. lanceolate, sessile, hairless, acute; upper broad, or at base all dentato-serrate, scattered. **p.** 5. *Fields and roadsides.* s. Fr. Nice. Fondi.

47. **Paralias.** Rays 5, forked. Bracts deltoideo-cordate, wider than long. Fr. reticulate with elevated points. L. smooth, *glaucous,* oblong, entire, somewhat acute, crowded. **p.** 8, 9. *Sandy shores. All authors describe the glands as lunate. I find them, as figured in 'Eng. Bot.,' with* 3, *or more often* 4, *points, and hardly lunate.*

b. *Capsule smooth.*

48. **tenuifolia.** Rays 5, forked. Bracts reniformi-subcordate. Glands with short blunt horns. L. linear, acute, quite entire, smooth, shining, approximate. **p.** 5. *Grassy.* Prov. Dau. Pyr.—Duby. *In specimens from Arles, given me by M. Requien, the Caps. seems often wrinkled or finely tuberculate.*

49. **terracina.** Rays 3–5, dichotomous. Horns of the Glands long, setaceous. Bracts ovato-semicircular. Floral L. ovate, acuminate. Upper L. lanceolate, 1-nerved, serrulate at top; lower obtuse with a point, approximate. **p.** 3–9. *Fields, roadsides, and sandy shores.* Prov. It. Sic.

50. **variabilis.** "Lowest L. small, elliptic; upper lanceolate, 1-nerved: all acute. Rays about 5, forked. Glands semilunar. Horns rather long, thick, obtuse. **p.** 6. Como. Corno di Canzi."—Bert.

51. **Gayi.** Lowest L. spatulate. Upper floral L. and Bracts lanceolato-linear. Rays about 3, nearly simple. Glands slightly lunate. **p.** 4–6. *Dry pine-woods.* Cors.

52. **dendroides.** Rays 3–10, but generally about 6. No Accessory Rays. Stem shrubby, erect. Glands rather obcordate than horned. Bracts ovato-subrotund. L. approximate. **s.S.** 5, 6. *Calc. rocks.* Shores of It.

53. **biglandulosa.** Rays 6–12, forked. Glands with club-shaped horns. L. coriaceous, lanceolate, acuminate. Caps. acutely 3-edged. Seeds 4-sided. **w.** 2, 3. *Hills.* Sic.

54. **nicæensis.** Rays many, once forked. Caps. wrinkled. Bracts cordato-ovate, obtuse, mucronulate. L. smooth, *glaucous*, oblong, mucronulate, quite entire, approximate. Seeds ovoid. **p.** 7, 8. *Barren uncult.* Carn.

ii. *Seeds not smooth.*

a. *Capsule not smooth.*

55. **biumbellata.** Umbel double. Bracts reniformi-cordate. Seeds ovoid, corrugato-sulcate. Horns of Glands club-shaped. L. linear, uniform; upper acute. **p.** 4, 5. *Sandy hills.* Sic. Prov.

56. **Myrsinites.** Rays 5–8, forked. Horns of Glands somewhat club-shaped. Caps. keeled. Bracts reniform, mucronulate. L. *glaucous*, obovato-oblong, hairless, rough on margin, approximate. Seeds longitudinally reticulate, rugose. **p.** 6, 7. *Stony.* Cherso. Madonie.

57. **portlandica.** Rays 5, forked. Glands 4, horns not clavate. Bracts concave, somewhat cordate. L. lineari-obovate, pointed, smooth, crowded, spreading. Margin entire. Seeds reticulate. **p.** 8. *Coasts.* s. Eng. Galloway.

58. **pinea.** Rays 5–9, dichotomous. Accessory Rays numerous. Horns of Rays setaceous, acute. Bracts cordato-reniform. L. *glaucous*, obtuse, mucronate, much crowded: lower linear; upper broader. Floral L. ovate, somewhat 3-lobed. *In my specimen the floral L. are linear, like the others: those within the umbel, and the Bracts, are lingulate, and some of them might almost be called 3-lobed.* Seeds pitted. **p.** 5, 6. *Stony.* Cherso. *Calc. rocks on shore.* It.

59. **segetalis.** Rays 5, dichotomous. Horns of Glands setaceous, acute. Bracts ovate, semicircular, mucronate. L. *glaucous*, linear, acuminate, mucronate, smooth, crowded; upper broader. Seeds pitted. **a.** 6, 7. *Fields.* Istria. Aust. Sil.

60. **aleppica.** "Erect. L. lineari-setaceous, crowded. Rays 5, forked. Accessory Rays numerous. Bracts ovate, acuminato-aristate. Glands semilunate. Caps. and Seeds finely granular. **a.** 6. Nicc. Apul. Cal."—Bert.

61. **taurinensis.** "Lower L. obversely lanceolate, emarginate, approximate; upper lanceolato-linear, entire. Rays about 4, long, dichotomous. Accessory Rays numerous. Bracts cordato-triangular. Glands slightly semilunate. Seeds pitted. **a.** 4–6. Lusengo near Turin."—Bert. *Specimens from s. Fr. have the bracts lingulate, acute, like those of* E. pinca; *but the plant is clearly annual.*

62. **cuneifolia.** Rays 5, trifid, forked. Bracts rhombic; upper part acutely serrulate. Caps. 3-edged, beset with thick bristles. Seeds rough with dots. L. smooth, cuneate, spatulate. **a.** 4, 5. *Grassy fields.* w. Sic.—Guss. *Bert. refers to this* E. stellulata *of Lois., of which the glands are said to be somewhat lunate; and on this account I place it here.*

b. *Capsule smooth.*

* *Annual.*

63. **Peplus.** Rays 3, dichotomous. Caps. with double and somewhat winged keels: (dorsal line of keel formed of 4 pits, Koch.) Bracts ovate. L. stalked, obovate, quite entire, caducous. **a.** 6–10. *Fields.*

64. **peploides.** Rays 2–4, dichotomous: (dorsal line of keel formed of 3 pits, Koch.) Bracts cordato-reniform. L. subrotund, nearly sessile, scattered. Glands reddish. **a.** 3, 4. *Cult.* Coasts of Mdt. Fr. Istr. and islands.

65. **falcata.** Rays 3, dichotomous. Horns of Glands short. Seeds marked with 4 rows of transverse depressed dots. Bracts oval or ovate, mucronate. L. lanceolato-linear, spatulate, approximate, caducous. **a.** 7–9. *Cult.* s. G. s. Sw.

β. *acuminata.* L. and Bracts acuminate.

66. **exigua.** Rays 3, dichotomous. Seeds tubercled. Bracts linear, acute, on a somewhat cordate base. L. linear, approximate, caducous. **a.** 6–9. *Cult.*

β. *rubra*, DC. L. widened upwards, retuse, with a mucro. s. G.

** *Woody.*

67. **Pityusa.** Rays 5, forked. Accessory

Rays numerous. Seeds ovate, reticulate. Glands retuse. Bracts and Floral L. ovate. L. crowded, lineari-lanceolate (involuto-acuminate, Bert.); lower deflexed. **w.** 6–8. *Sandy shores.* Narb. Prov. Lig. K. Nap.

68. **Cupani.** Rays 3–5, forked. Seeds reticulate. Bracts rhombeo-ovate. L. coriaceous, somewhat remote, obversely lanceolate, acute, 1-nerved; lowest serrulate. **w.** 5–9. Drepano and Segesta, Sic.—Bert.

E. *Leaves opposite!*

69. **Lathyris.** Rays 4, dichotomous. Glands horned. Caps. smooth. Seeds reticulate. Bracts oblongo-ovate, acute. L. decussate, sessile, oblongo-linear. **b.** 6, 7. *Cult.* s. Sw. s. Tyr. Austrian shore. It. *occ. Said to spring up periodically in certain thickets in England.*

719. MERCURIALIS.

1. **tomentosa.** Woody. L. ovate, tomentose. Caps. hirsute. Fertile Fl. on short ✓ stalks. **w.** 9, 10 (6, 7, Lois.) Lang. Rous. Corbières.

2. **elliptica.** Woody. Stem brachiate. L. ✓ lanceolate, serrate, quite smooth. **w.** Summer. *Mountains.* Cors.

3. **perennis.** Stem simple. L. stalked, ✓ ovato-lanceolate. Fertile Fl. on stalks much longer than themselves. **p.** 4, 5. *Shade.*

4. **ovata.** Stem simple. L. ovate, nearly ✓ sessile. Fertile Fl. on stalks much longer than themselves. **p.** 4, 5. *Woody hills.* s. G. *Perhaps a var. of Sp.* 3.

5. **annua.** Stem branched. L. ovato-lanceolate. Fertile Fl. nearly sessile. **a.** 6–9. *Rich.* ✓

XCIII. URTICEÆ.

Perianth inferior, 3- 4- or 6-parted; sometimes, in the fertile flowers, undivided. Stamens inserted in the base of the perianth, and opposite to its divisions. Ovary 1–2-celled. Seeds solitary. Stigmas 1 or 2. Fruit not bursting. *L. with detached and generally caducous stipules.*

720. URTICA.

A. *Monœcious.*

1. **rupestris.** Spikes simple, shorter than L.-stalk; with barren, fertile, and complete flowers. L. ovate, acuminate, coarsely serrate, with 4 stipules to each pair. **w.** 4, 5. *Volcanic rocks.* Militello, Sic.

✓ 2. **urens.** Spikes simple, shorter than L.-stalk, complete. L. elliptic-ovate, acute, coarsely serrate; with 4 stipules to each pair. **a.** 6–10. *Waste.*

3. **neglecta.** Spike simple, complete; upper longer than L.-stalk. Rachis not dilated. L. ovato-elliptic, acute, sharply serrate; with 2 stipules to each pair. **a.** 11–5. *Rich.* Sicily.

✓ 4. **membranacea.** Spikes simple, separate: barren longer, fertile generally shorter, than L.-stalk. Rachis dilated. L. ovate, acute, coarsely toothed; with 2 stipules to each pair. **a.** 2–4. *Uncult.* s. Fr. It.

✓ 5. **pilulifera.** Barren clusters panicled. Fertile Fl. in globular heads. Seeds tubercled. L. ovate or cordate, inciso-serrate. **a.** 6, 7. *Waste.* m. and s. Eur.

β. balearica. Stems and L.-stalks purplish.

6. **Dodartii.** Barren Clusters panicled. Fertile Fl. in globular heads. Seeds nearly smooth. L. ovate or ovato-lanceolate, nearly entire. **a.** 6–8. Copford in Essex. Upwell in Norf. Wisbeach in Cambridgeshire.—Bab.

B. *Diœcious.*

7. **dioica.** Spikes branched. L. all cordate, coarsely serrate; upper prolonged. Root creeping. **p.** 7, 8. *Waste.* ✓

8. **hispida.** Spikes branched. Lower L. orbicular, cordate at base; upper somewhat doubly serrate. **p.** 6, 7. Prades in Rous. Cors. Sic.

9. **sicula.** Spikes branched; the fertile pendulous. L. ovate (not cordate), acuminate, sharply serrate, *smaller*. Plant *slender*, woody at base. **p. w.** 5, 6. *Shady hills.* Sicily.—Guss.

721. PARIETARIA.

1. **officinalis.** L. ovato-lanceolate, often acuminate, triple-nerved, with pellucid dots. ✓ Cymes in pairs, bifid. Bract digitate. Segm. ovate, obtuse. **p.** 5–9. *Walls and banks.*

α. *erecta*, Koch. Barren Cal. equalling stamens.

β. *diffusa*, Koch. Barren Cal. at last twice as long as stamens. P. judaica *of many authors* (*not of Linn.*) *belongs to* diffusa. *Godron*, 'Fl. de Lorr.,' 278, *further distinguishes these. In* P. erecta *the bracts are all separate, not decurrent ; in* P. diffusa *they are decurrent, and united at the base into a sort of involucrum.*

2. **lusitanica.** L. small, ovate, 3-nerved at base. Cymes solitary, axillary, about 3-flowered. Bracts digitate. Segm. lineari-lanceolate. Stem procumbent, filiform. **a.** 5, 6. (**p.** Bert.) *Walls, &c.* Rous. Toul. s. It. Corsica.

β. *filiformis*, Ten. Div. of Involucrum somewhat unequal.—Guss.

3. **Soleirolii.** "L. small, nearly circular, oblique at base. Fl. solitary, axillary. Stem filiform, procumbent. **p.** 5. *Shady walls.* Cors. Sard."—Bert.

4. **cretica.** "Annual. Stems filiform, diffuse, much branched. L. rhombeo-ovate, 3-nerved, equal at base, dotted. Invol. compressed, somewhat tubular at base. Segm. lanceolate, two of them broader, longer, and spatulate. **a.** 2, 3. *Walls and rocks.* Sic. Islands."—Guss.

CANNABIS.

Cannabis sativa, the common Hemp, a diœcious plant, with 5 stamens, 2 styles, a solitary nut, erect stems, and rough digitate L., sometimes occurs in field cultivation.

722. HUMULUS.

1. **Lupulus.** Climbing. Fl. axillary : barren in racemes ; fertile in solitary catkins. **p.** 7. *Hedges and thickets. Perhaps an escape.*

723. FICUS.

1. **Carica.** L. cordate, palmate, rough above, pubescent beneath. **s.T.** *Dry stony.* s. Fr. It. *nat.*

MORUS.

Two species of *Morus* (Mulberry) are planted by the roadsides or in the fields in the s. of Eur. :—*M. alba*, with a small white Fr., and with the Stigma and margin of Cal. hairless, cultivated for silkworms and as fodder for cattle ; *M. nigra*, with a dark Fr., hairy Stigma, and hairy margin to Cal., cultivated for its fruit.

724. CELTIS.

1. **australis.** L. oblongo-lanceolate, acuminate, sharply serrate, rough above, villous beneath, unequal at base. Fr. solitary. **T.** 5. s. Alps. It.

725. ULMUS.

[I follow Smith in the first five species of this genus, as, on the whole, the most satisfactory guide.]

1. **campestris.** Caps. cloven to the place of the seed, oblong, hairless. Fl. nearly sessile. L. doubly serrate. **I.T.** 3, 4. *In hedges.*

2. **suberosa.** Caps. cloven to the place of the seed, nearly circular, hairless. Fl. stalked. L. doubly serrate. *The corky bark is a mere accident.* **I.T.** 3. *In hedge-rows.*

3. **glabra.** Caps. cloven to the place of the seed, obovate, hairless. Fl. nearly sessile. L. doubly serrate. *An elegant tree, with small L. and drooping branches, of which the young shoots are smooth.* **I.T.** 3. *Hedges : abundant in* Essex *and* Hertfordshire.

4. **major.** Caps. obovate, hairless : the division not reaching half-way to the seed. Fl. nearly sessile, 4-cleft. L. broad, unequally serrate. Branches somewhat drooping. **I.T.** 3. *Hedges and roadsides* near London.

5. **montana.** Caps. nearly circular, hairless : division not reaching half-way to seed. Fl. stalked, 5- or 6-cleft. L. large, like those of the Hazel. Branches sometimes drooping. **I.T.** 3, 4. *Hedges and woods. This is perhaps the only Elm which is a native of England.* U. glabra *has the next claim. The fruit is very large and conspicuous, lasting on the tree to the end of May.*

6. **effusa.** Caps. villoso-ciliate. Fl. stalked, drooping. L. doubly serrate. **T.** 3, 4. *Mountain woods.* G.

JUGLANS.

Juglans regia, the Walnut, is planted extensively in some countries, in fields and by roadsides.

XCIV. AMENTACEÆ.

Flowers rarely complete. Barren Flowers in heads, or catkins, or in rather pendulous spikes. Perianth, if any, superior. These are divided into Tribes.

1. CUPULIFERÆ.—Fertile Flowers surrounded by a coriaceous Involucre; not forming a Catkin . . . . Gen. 726–729.
2. SALICINEÆ.—All the Flowers in Catkins. Fruit not fleshy, with 1 cell and many seeds . . . . Gen. 730, 731.
3. BETULINEÆ.—Flowers all in Catkins. Scales of the barren Catkins peltate, each 3-flowered. Fruit not fleshy, 2-celled. Seeds solitary . Gen. 732, 733.
4. PLATANEÆ.—Flowers all in dependent, ball-like Catkins. Scales and Flowers irregularly intermixed. Carpels 1 or 2, each of 1 cell and 1 seed Gen. 734.
5. MYRICEÆ.—Flowers all in Catkins. Scales of barren Catkins 1-flowered. Fruit a Drupe, formed by the fleshy scales of the catkin . . . Gen. 735.

Tribe I. *CUPULIFERÆ.*

726. FAGUS.

✓ 1. **Castanea.** L. lanceolate, acutely serrate, smooth beneath. Prickles of outer Cal. compound, entangled. Stigmas 6. **I.T.** 2–5. *Woods.*

✓ 2. **sylvatica.** L. ovate, slightly serrate, with silky cilia when young. Prickles of outer Cal. simple. Stigmas 3. **I.T.** 4, 5. *Woods.*

727. QUERCUS.

A. *L. deciduous.*

i. *Scales of Cup spreading.*

1. **Fontanesii.** L. sinuato-serrate, with stellate pubescence above, tomentose beneath. Lobes mucronate. Bark corky. Cups on short stalks, with long, linear, recurved scales. **I.T.** 4, 5. *Woods.* Calabria. Bosco della Fienza, Sic.

2. **Ægilops.** L. ovato-oblong, serrate, sinuate. Lobes acute, cuspidate. Cal. hemispherical, very large. **I.T.** 5. Vicenza and Verona, *rare.* Sic.

✓ 3. **Cerris.** L. oblong, sinuato-pinnatifid. Lobes oblong, rounded, generally with a small cusp. Scales of Cup long, twisted. **I.T.** 5. s. Eur. w. Fr.

β. austriaca. L. slightly sinuate.

The Fruit does not ripen till the second year, and is consequently below the L.

✓ 4. **Toza.** L. oblong, sinuate, or pinnatifid. Lobes ending in an obtuse angle, without cusp. Scales adpressed at base. **I.T.** w. Fr.

ii. *Scales of Cup adpressed.*

5. **apennina.** Fertile Fl. scattered along Rachis, which far exceeds L.-stalk. "L. somewhat stalked, obovate, sinuate. Lobes entire, obtuse, pubescent beneath. Cup hemispherical (downy, GUSS.), about half as long as acorn. Scales lanceolate, somewhat obtuse. **I.T.** Als. s. Fr."—DUBY.

6. **pedunculata.** Fertile Fl. scattered along Rachis, which far exceeds L.-stalk. L. nearly sessile, ovato-oblong, sinuate. Lobes obtuse, entire. **I.T.** 4. *Woods.*

7. **intermedia.** "L. on long stalks, cuneato-oblong, somewhat pinnatifid, covered beneath with a starry pubescence. Lobes short, rounded. Sinuses shallow, obtuse. Base obtuse, unequal. Fertile Catkins on very short stalks. Fr. oblong. **T.** 4, 5. Eng."—DON.

8. **brutia.** Fertile Fl. 1–3, crowded at summit of a long rachis. L. oblong, smooth, semipinnatifid. Lobes somewhat dentate on one side. Sinus very acute. **I.T.** K. Nap. —TEN.

9. **pubescens.** Rachis very short. L. oblongo-elliptic, stalked. Lobes entire, ending in an obtuse angle, hoary beneath. **I.T.** 5. m. and s. Eur.

10. **sessiliflora.** Rachis very short. L. obovato-oblong, stalked, sinuate. Lobes entire, rounded, *generally smooth.* **I.T.** 4, 5. *Woods.*

11. **leptobalana.** "L. smooth above, hoary beneath, somewhat cordate at base, obovato-oblong, sinuato-lobate. Lobes short, obtuse, entire. Fr. sessile, cylindrical, (3 or 4 times as long as broad.) **I.T.** 4, 5. *Woods.* Madonic. Cal."—GUSS.

12. **amplifolia.** "L. smooth above, villoso-pubescent beneath, broadly obovate and oblong, cordate at base. Lobes broad, short, entire or somewhat crenate. Fr. on short spikes. Cups hirsute when young. **l.T.** 4, 5. *Shady valleys.* Sic."—Guss.

13. **Esculus.** Rachis very short. L. attenuate, on long stalks, sinuate. Lobes angular or dentate, downy on both sides when young. **l.T.** 4. Pdm. K. Nap.?

B. *Leaves permanent.*

i. *Teeth not spinescent.*

14. **bivoniana.** "L. somewhat cordate, ovato-oblong, smooth above, hoary beneath, sinuato-lobate or tripartite: the middle lobe lineari-oblong, entire or inciso-dentate. Cups solitary, sessile. Scales spreading. **T.** 4, 5. *Wood* of Gerace, Sic."—Guss.

✓ 15. **Ilex.** *L. generally repand and dentate, each tooth with a sharp mucro; but varying much in form and margin; sometimes quite entire.* Bark even, not corky. **T.** 5. s. Europe.

In general, the Rachis is very short, and the lower Fl. nearly or quite sessile; but I have a specimen from s. Fr. with a long rachis and sometimes as many as 6, quite separate flowers, of which the lowest is far from the stem. It was a dwarf plant, with slightly dentate L., and may be a species.

✓ 16. **Suber.** *L. like those of* Q. Ilex, *but when gathered in flower the upper side becomes black in drying, and both L.-stalk and Fl.-stalk are longer.* Bark chinky and corky. **T.** 5. s. Fr. Ist. s. It. *What the* Pseudo-suber *of Santi, mentioned by Tenore, may be, I do not know.*

ii. *Teeth of L. spinescent.*

✓ 17. **coccifera.** L. cordate at base, spinoso-dentate. **S.** s. Fr. It. Iapygia.

β. *humilis.* L. downy beneath.

728. CORYLUS.

✓ 1. **Avellana.** Stipules oblong, obtuse. Cal. of Fr. campanulate, lacero-dentate. L. subrotundo-cordate, acuminate. **S.** 2, 3. *Woods and thickets.*

2. **tubulosa.** Stipules oblong, obtuse. Cal. of Fr. tubular, contracted at top. L. subrotundo-cordate, acuminate. **S.** 2, 3. *Woods.* Istria, *abundant.*—Koch.

729. CARPINUS.

1. **Betulus.** Scales of Catkin tripartite. Div. lanceolate. **T.** 4, 5. *Woods.* ✓

2. **duinensis.** Scales of Catkin ovate, undivided. **T.** 4, 5. Austrian shore.—Koch.

3. **Ostrya.** Invol. of Fr. nflated, membranous! Catkin ovate, drooping. L. ovate, acuminate, somewhat cordate. **T.** 4, 5. adr. G. It. ✓

Tribe II. *SALICINEÆ.*

730. SALIX.

I have laboured in vain to reduce the Willows into a regular system, and I have therefore thought it the safest way to bring together all that had been enumerated as species by Hooker and Koch; adding occasionally a few observations of Babington or of my own, or deduced from the plates of 'Eng. Bot.' I do not believe that any person, however well skilled in other parts of botany, would be able to determine the species from the descriptions. Some degree of traditional knowledge in this genus is indispensable. It is probable that not one-half, perhaps not one-fourth, of the forms here enumerated are genuine species; but I am unable to determine which should be adopted and which omitted. I am not, however, prepared to admit that each tribe, the *Nigricantes* for instance, is in fact only one species; and I should still less consider this to be the case with the *Bicolores*; but even if it were so, I am still unable to point out satisfactory marks to distinguish these different tribes. All that I could do, I have inserted in its place.

In all the *Salices* the typical form of the Fruit seems to be that of a pear reversed, often described as lanceolate or subulate on an ovate base: in some, as in *S. purpurea*, not much longer than broad; in others 3 or 4 times as long. The shape of the L. is taken from the middle of a healthy shoot, not springing immediately from the root, nor from the trunk of an old tree.

Sect. I. Catkins lateral; the stalk producing no leaf-buds, but falling off with the catkin. Stalk of fertile Catkins leafy. Scales of one colour.

A. Fragiles. Scales falling off before the fruit is ripe. Trees, and for the most part only bearing fruit as trees, while in all the other sections (except, perhaps, the *Pruinosæ*) the plants produce fruit as Shrubs or as Osiers. L. broadest below the middle.

i. Stamens always more than 2. Sp. 1, 2.

ii. Stamens 2, rarely 3. Sp. 3–8.

B. AMYGDALINÆ. Scales persistent.

i. Stamens 3. Sp. 9–12.

ii. Stamens 2. Sp. 13.

SECT. II. Catkins lateral, their stalks furnished with scales, rather than L. Scales of Catkin discoloured at the top (not always in the *Vacciniifoliæ*).

C. PURPUREÆ. Anthers purple, very dark after flowering.

i. Stamen 1. Sp. 14–18.

ii. Stamens 2, united. Sp. 19, 20.

D. PRUINOSÆ. Anthers yellow or yellow-brown after flowering. Branches pruinose. Inner bark of a lemon-colour. Sp. 21, 22.

E. VIMINALES, *Osiers*. Anthers yellow or yellow-brown after flowering. Branches not pruinose. Inner bark green.

i. Fertile Catkin straight. Sp. 23–29.

ii. Fertile Catkin incurved. Sp. 30–32.

F. CAPREÆ, *Sallows*. Bushes, not convertible into Osiers. Catkins nearly sessile, with a few imperfect L. at base. Germens stalked. L. broadest above the middle.

i. *Cinereæ*, BORRER. Sp. 33–41.

ii. *Nigricantes*, BORRER. These generally (not always) become black in drying, or obtain a peculiar, dingy, glaucous hue underneath, which is not the case with the *Cinereæ*. There is also a little group of glands at the base of the stipules, like eggs in a nest. In the *Cinereæ* it is very rare to find any glands on the stipules; and when they do occur, they are not thus disposed. Most of the species have long, forked styles. Sp. 42–50.

iii. *Bicolores*, BORRER. L. firmer, smoother and more grey beneath, than in the two preceding divisions. Sp. 51–67.

G. ARENARIÆ differ from **F.** in having sessile catkins. Sp. 68–70.

H. VACCINIIFOLIÆ. Small Shrubs, with small parts. Scales hardly discoloured. Sp. 71–76.

I. REPENTES. Shrubs with a creeping stem, more or less subterraneous, and decumbent branches. Sp. 77–79.

K. ROSMARINIFOLIÆ. Shrub erect. Otherwise as **I.** Sp. 80–82.

SECT. III. Catkins terminal.

L. MYRSINITES. Catkin apparently terminal, proceeding only from the ultimate buds of each branch. Sp. 83–86.

M. RETICULATÆ. Catkin opposite the terminal L., with an intervening bud. Sp. 87.

N. GLACIALES. Catkin truly terminal; the Stalk being a small branch producing leaves and buds. Sp. 88–90.

SECT. I. *Catkins lateral, on a leafy stalk. Scales of one colour.*

A. FRAGILES.

i. *Stamens more than 2.*

1. **pentandra.** Stamens 5–10. (Length of Fr. 2½ times breadth, E. B.) (Fr. nearly sessile, HOOKER.) (Stalk about twice nectary, KOCH.) (Style hardly any, HOOKER; moderate, KOCH.) ✓ L. ovate, ovato-lanceolate, or elliptico-oblong, acuminate, with numerous glands at the base. Serratures small, numerous, blunt. Stipules ovato-oblong, equal-sided. **l.S.** 5, 6. *Banks of streams.* Eng. Ir. n. G. Alps. Aust.

2. **cuspidata.** Stamens 3–5. Germen ovate at base, prolonged, smooth. Stalk 3 or 4 times nectary. Style moderate. L. oblongo-elliptic or oblongo-lanceolate, acuminate, generally widest above middle, densely glanduloso-serrate, with 2 or 4 glands at base. Stip. semicordate, oblique.—KOCH. **T.** 5, 6. *Moist meadows.* n. Eng. Pom. Mecklenb. *The mode of growth, the longer stalk to the germen, the fewer glands at the base of the L., and the form of the stipules, distinguish this from Sp.* 1.

ii. *Stamens 2.*

3. **decipiens.** Germen tapering, stalked, smooth. Style longer than cloven stigmas. L. of Stalk of Catkin shorter in proportion than the others, obovato-lanceolate; other L. lanceolate. Bark grey, polished. **T.** *Moist meadows.*—SM. *The pale, polished back, and the fewer and shorter floral L., seem to be all we have to depend upon in separating this species or var. from the following. Smith adds, however, that the Style is equal to one-third of germen.*

4. **fragilis.** L. ovato-lanceolate, acute, serrate, smooth. Germen on short stalk (quite sessile, E. B.), oblongo-ovate. Style short. ✓ Stigmas bifid. (Length of Fr. twice breadth, E. B.) (Scales pubescent and much ciliate, HOOKER.) **T.** 4, 5. *I copy this description*

from Hooker. The L. are, in fact, a little broader towards the base than those of the following species, but there is not much difference. Koch unites Sp. 3, 4, and 5, and is probably right in so doing.

5. **russelliana.** L. lanceolate, tapering at each extremity, strongly serrate, smooth, very pale beneath. Germen stalked (nearly sessile, E. B.), lanceolate, acuminate, smooth. Style as long as bifid stigmas. (Length of Fr. 4 times breadth, E. B.) Scales narrow lanceolate, slightly ciliate, Hooker. **T.** 4, 5. *Osier-grounds and marshy woods.*

6. **alba.** (Germen 3 times breadth, E. B.) Stalk hardly equalling the very short nectary. Stigma nearly sessile, short, emarginate. L. lanceolate, acuminate, serrulate, silky, especially beneath. Stip. lanceolate. **T.** 4, 5. *River-banks, &c.*

β. *cærulea.* L. nearly or quite smooth, grey beneath.

7. **vitellina.** Germen smooth, lanceolate, sessile, (twice breadth, E. B.) Stigma nearly sessile, bipartite. L. lanceolate, acuminate, serrulate, silky beneath. *Back of Branches yellow or golden.* **T.** 5. *Hedges and osier-grounds. Probably a var. of Sp.* 6.

8. **babylonica.** Branches long, flexile, drooping. L. lineari-lanceolate, acuminate, serrulate, smooth. Germen ovate, sessile, smooth. **T.** 3, 4. *Banks. Not wild.*

B. Amygdalinæ.

i. *Stamens* 3. *Cultivated as osiers, but becoming trees if left.*

9. **undulata.** Scales villous. Caps. $2\frac{1}{2}$ times breath. Stalk twice nectary, $\frac{1}{2}$ germen, $\frac{1}{3}$ scale. Style as long as bifid stigma. L. lanceolate, acuminate, serrulate (at first pubescent, Koch). Stip. semicordate. **s.T.** *or Osier.* 4, 5. *River-banks.* Eng. n. G.

β. *lanceolata.* Germen and L. hairless.

10. **triandra.** Scales retuse, hairless. (Germen $2\frac{1}{2}$ times breadth. Stalk 3 times nectary, $\frac{2}{5}$ of scales, $\frac{2}{5}$ of germen, E. B.) Stigma sessile, retuse. L. oblongo-lanceolate, acute, serrate, smooth. *If left as a tree, it casts its epidermis in the autumn, as does the preceding.* **T.** 5. *Moist woods and osier-grounds.*

11. **hoffmanniana.** Germen 3 times breadth, ovate, compressed. (Stalk nearly equal to puckered, obovate scale. Stigmas nearly sessile, Sm.) L. all lanceolate, somewhat rounded at base, serrate, smooth. *Stip. large, ear-like.* **s.T.** 5. *Sides of streams. Probably a var. of Sp.* 10.

12. **amygdalina.** Scales not hairy at top. Germen ($2\frac{1}{2}$ breadth, E. B.) (hardly $1\frac{1}{2}$, J. W.) Stalk 3 times nectary, $\frac{2}{3}$ scale, $\frac{3}{5}$ germen. Stigma nearly sessile, emarginate (bifid, Hook.). L. ovato-lanceolate, acuminate, glaucous beneath. Stip. semicordate. (Young Branches furrowed! Hooker.) **s.T.** 4, 5. *Banks and streams. Sp.* 10, 11, *and* 12, *are united by Koch.*

ii. *Stamens* 2.

13. **hippophæfolia.** Scales hirsute. Caps. ovato-conical. Stalk equalling nectary. Style long. Stigma bifid. L. lanceolate, acuminate, glanduloso-denticulate, at first pubescent. Stipules semicordate, Koch. **T.** 4, 5. *Moist banks.* Rhine. Boh. Sil. Bremen.

Sect. II. *Catkins lateral. Stalks hardly leafy. Scales discoloured at top. Anthers purple, black after flowering. L. quite even, but not shining on the upper surface. Catkin nearly sessile, bracteate.*

C. Purpureæ.

i. *Stamen* 1. *Plant turning black in drying, and staining the paper. L. broadest above the middle.*

14. **purpurea.** Decumbent. Fr. ovate ($1\frac{1}{4}$ breadth, E. B.) (twice, J. W.), very pubescent, sessile. Stigma ovate, nearly sessile. L. narrow, obovato-oblong, smooth. Fertile Catkins very compact. **S.** 8–3. *Banks and moist meadows.*

15. **Helix.** Erect. Fr. ($1\frac{2}{3}$ breadth, E. B.) oblongo-ovate, pubescent, sessile. Stigma long, ovate, emarginate, nearly sessile. L. obovato-oblong, serrate, smooth. (*Bark glossy yellow,* Hooker.) **S.** 3, 4. *Marshes and moist banks.*

16. **forbyana.** Erect. (Germen $1\frac{3}{4}$ breadth, E. B.) Stigmas linear, bifid. (L. lanceolato-oblong, Sm.) (Stipules small, downy, Hooker.) (*L. so widely different from those of* S. Helix, *that the two species could not be confounded by the most careless observer. Twigs of a greyish yellow.*—Sm.) **S.** 4. *Meadows and osier-grounds.*

17. **lambertiana.** Erect. Fr. short ($1\frac{1}{4}$ breadth, E. B.), very pubescent, sessile. Stigmas ovate, emarginate. L. obovato-oblong, serrate, smooth. **S.** 4. *Banks of streams.* (Twigs purplish, Sm.) *L. broader at base than in Sp.* 15.

18. **woolgariana.** Erect. Germen ($1\frac{3}{4}$ breadth, E. B.), very pubescent, sessile. Stigma nearly sessile, ovate, emarginate. *L. more cuneate, and less rounded at base, than in the allied species.* **S.** 5. *Osier-grounds.* Lewes. *There is no tangible difference between this and Sp.* 17. *Babington considers both as var. of* purpurea. *Koch considers the whole subdivision as one species.*

ii. *Stamens* 2, *united. Plant not turning black nor staining the paper.*

✓ 19. **pontederana.** Caps. ovoideo-lanceolate. Stalk as long as nectary. Style moderate. Stigma ovate, emarginate. L. serrulate, downy when young. Stipules semicordate. **S.** 3, 4. *Mountain woods.* Boh. lower Aust. Carn. Sw.—Koch.

✓ 20. **rubra.** Caps. twice breadth. Stalk shorter than nectary. Style long. Stigmas linear, undivided (ovate, E. B.). L. lineari-lanceolate, acute, serrate, downy when young, afterwards smooth and *green on both sides.* **S.** 4, 5. *Moist meadows and osier-grounds.*

β. Adult L. silky beneath.—Koch.

D. Pruinosæ.

✓ 21. **acutifolia.** Caps. ovoideo-conical, hairless, sessile. Style long. Stigma lineari-oblong. L. lineari-lanceolate, acuminate, serrate, hairless. Young Branches hairless. Stip. lanceolate, acuminate.—Koch. **T.** or **1.S.** *Banks.* Sil. Berlin.

✓ 22. **daphnoides.** Caps. ovato-conical, hairless, sessile. Style long. Stigmas oblong. L. elliptic, acuminate, glanduloso-serrate, hairless. Young Branches and L. somewhat hairy. Stip. semicordate.—Koch. **T.** 3, 4. Rhine and n. G.

E. Viminales, *Osiers.*

i. *Fertile Catkin straight.*

23. **mollissima.** Caps. ovoideo-conical, tomentose. Style long. Stigmas linear, cloven. L. long, lanceolate, acuminate, remotely repando-denticulate, finely tomentose beneath when young. Stip. ovate, acute. **S.** 4. *Banks and streams.* n. G.—Koch.

✓ 24. **viminalis.** Germen lanceolato-subulate. Caps. (3 times breadth, E. B.) (lanceolate on an ovate base, Koch) (falling short of scale, E. B.) Stalk shorter than nectary. Style long. Stigmas linear, generally deeply cloven at last, entire at first. L. lineari-lanceolate, obscurely crenate. Stipules lanceolate, very small. **S.** 4, 5. *Wet places and osier-grounds.*

25. **stipularis.** (Fr. obpyriform, $1\frac{3}{4}$ breadth, Sm.) Stalk shorter than nectary. Style long ($\frac{1}{4}$ stigma, E. B.). Stigma linear, undivided. *Scales very shaggy.* L. lanceolate, obscurely crenate. Stip. large, semicordate. **S.** 3. *Moist woods and osier-grounds.*

26. **smithiana.** Caps. lanceolato-subulate, much longer than scale (3 times breadth. Stalk $\frac{1}{3}$ scale, $\frac{1}{4}$ germen, as long as nectary, E. B.) Style long (shorter than the long, linear, deeply divided stigmas," Sm.) L. lanceolate, obscurely crenate, covered beneath with a satiny pubescence. **S.** 4, 5. *Moist meadows, woods, and osier-grounds.*

27. **ferruginea.** Germen ovato-subulate, stalked, silky. Style about as long as the linear, entire stigma. L. lanceolate, attenuate, very acute, silky beneath, obscurely serrate. Stip. very minute. Catkins stalked. **S.** 4, 5. Nuthurst in Sussex.

28. **acuminata.** Germen ovate (twice breadth, E. B.), hairy, stalked. (Stalk twice nectary. Scale $\frac{2}{3}$ germen, E. B.) Style as long as undivided stigma. Catkin cylindrical (on leafy stalks, E. B.). L. lanceolato-oblong or elliptic, and hardly obovate, pointed, wavy, finely toothed. Stip. semiovate. **S.** 4, 5. *Moist woods and hedges.*—Sm. *Put by Bab. with the* Cinereæ.

29. **holosericea.** Germen stalked, densely silky. Stigmas ovate, sessile. Scales black, very shaggy. Catkins cylindrical. L. lanceolate, somewhat abbreviate, acuminate, serrato-crenate, smooth above; pale, downy, strongly veined beneath. **S.** 4, 5. Lewes. (Catkins sessile. Stip. semiovate, obtuse. Stalk 2 or 3 times nectary. Style very short. Stigma emarginate.—Koch, *who puts this among the* Capreæ, *perhaps correctly.*) *The stalked catkins of the three last seem to separate these forms both from the* Viminales *and the* Cinereæ. *They are probably all one species.*

ii. *Fertile Catkin incurved.*

30. **seringiana.** Germen lanceolate, on an ovate base, tomentose. Stalk twice nectary. Style long. Stigma cloven. L. lanceolato-oblong (ovato-lanceolate, J. W.), acuminate, crenulate, white, tomentose and veiny beneath. Stip. ovate, acute. **S.** 4. *Hill-streams.* Sw. Tyr. Carn.—Koch.

31. **salvifolia.** Germen lanceolate, on an ovate base, tomentose. Stalk twice nectary. Style short. Stigma oblong, nearly entire. L. oblongo-lanceolate, acute, obsoletely denticulate, hoary, tomentose, and veiny beneath;

lower obtuse. Stip. semicordate. **S.** In the Eymatte near Berne.—Koch. *There seems no difference between these two, except in the pistil.*

32. **incana.** Caps. ovato-lanceolate, smooth, 4 times breadth, nearly sessile. Stalk twice nectary. *Style long. Stigma cloven.* Scales brownish, bearded, not hairy all over. L. lanceolato-linear, acuminate, denticulate, hoary with a densely-matted pubescence. **s.S.** 4. *Mountain streams.* s. G. Sw. Fr. *I suspect a creeping rhizoma, and that this species is allied to the* Rosmarinifoliæ.

F. Capreæ, *Sallows.*

i. *Cinereæ,* Borr. *Germen silky.*

33. **cinerea.** Caps. 3 times breadth. Stalk 4 times nectary, $\frac{1}{3}$ capsule, $\frac{2}{3}$ scales ($\frac{1}{2}$ scales, Sm.). Style short. L. obovato-elliptic, more or less glaucous above; pubescent and reticulate beneath. Margin slightly recurved. (Buds hoary, Koch.) Stip. semicordate. **s.T.** 4. *Banks of rivers and moist woods.*

34. **aquatica.** (Caps. twice breadth. Stalk 4 times nectary, $\frac{1}{2}$ scales, $\frac{1}{2}$ germen.—E. B.) Style very short. L. obovato-elliptic, somewhat serrate, minutely downy, flat, rather glaucous beneath. (Buds hoary, Koch.) Stip. rounded, toothed. **s.T.** 4. *Moist.*

35. **oleifolia.** (Caps. about twice breadth.) Stalk short. Stem erect. Branches straight, spreading. L. obovato-lanceolate, flat, rather rigid, minutely toothed, acute, glaucous, reticulate, and finely hairy beneath. Stip. small, notched, rounded. Catkin oval, nearly as broad as long. **s.T.** 3. *Woods and hedges.* Norf. Tunbr.—Sm. *Babington unites these three.*

36. **aurita.** (Caps. twice breadth. Stalk $1\frac{1}{4}$ nectary, $\frac{1}{2}$ scale, $\frac{1}{2}$ germen, E. B.) (Stalk 3 or 4 times nectary. Style very short. Stigma ovate, emarginate, Koch.) L. obovate, repando-dentate, wrinkled with veins, very downy beneath, with a small bent point, recurved at the margin. Stip. roundish, semicordate. (Buds nearly smooth, Koch.) **S.** or **s.T.** 5. *Thickets, &c.*

37. **grandifolia.** "Caps. long lanceolate, on a nearly ovate base, tomentose. Stalk 6 times nectary. Style very short. Stigmas ovoid, cloven. Catkins at first nearly ovate. L. oblongo-obovate, acuminate, flat, obsoletely undulato-serrate, smooth above, pubescent and glaucous beneath. Stip. reniform, very large. Buds at last quite smooth. **S.** 3, 4. *Subalpine woods.* Alps. *Perhaps a var. of Sp.* 39."—Koch.

38. **silesiaca.** "Caps. lanceolate, on an ovate base, smooth or silky. Stalk 3 or 4 times nectary. Style moderate. Stigma ovate, cloven. L. obovate, acuminate, undulato-serrate, nearly of same colour beneath, when full grown quite smooth; the lowest very blunt. Stip. reniformi-semicordate. **S.** 5, 6. *Mountain woods.* Rieseng."—Koch.

39. **Caprea.** (Caps. twice breadth. Stalk twice nectary, $\frac{1}{2}$ scale, $\frac{2}{3}$ germen, E. B.) (Stalk 4–6 times nectary. Style very short. Stigma ovoid, cloven, Koch.) (Stigma undivided, Hooker.) L. obovate or elliptic, acute, serrate, waved on margin, downy and glaucous beneath, (recurved, acuminate, Koch.) (Stip. reniform, Koch; semicordate, Hooker.) (Buds smooth, Koch.) **S.** or **s.T.** 4, 5. *Woods, &c.*

40. **sphacelata.** *There is somewhat of a stalk to the catkin in E. B.* Germen ovato-lanceolate, ($2\frac{1}{2}$ times breadth,) stalked, silky. Stalk 4 times nectary, $\frac{2}{3}$ scale, $\frac{2}{3}$ germen. Stigma emarginate, longer than style. L. elliptico-obovate, even, veiny, downy on both sides, discoloured at the point (not in E. B.). Stip. semicordate, toothed, erect, Sm. **S.** 4, 5. Finlarig near the head of Loch Tay, Scotland. *Koch considers this a synonym of the following.*

41. **depressa.** Cal. with a leafy stalk. Germen elongato-lanceolate, on an ovate base, tomentose. Stalk 5 times nectary. Style very short. Stigma ovoid, cloven. L. obovate or elliptic, somewhat glaucous and velvety, sometimes, when old, quite smooth. Stip. reniform. **S.** 4. *Boggy ground.* Tschirnan. Sil. *Resembles* S. aurita; *but the barren Catkins are more slender, the fertile more lax; the adult L. are flat, quite smooth, and quite entire: those of the young branches are, however, obtusely undulato-serrate.*

ii. *Nigricantes,* Borrer.

42. **cotinifolia.** (Germen twice breadth. Stalk 3 times nectary, $\frac{4}{5}$ scale, $\frac{2}{5}$ germen, E. B.) Style cloven. Stigma roundish, emarginate. L. subrotundo-elliptic, obtusely dentate, downy, glaucous, and veiny beneath. **S.** 4, 5. Norf. and Suff.—Hooker.

43. **hirta.** "Stem erect. Branches densely hairy. L. elliptico-cordate, acuminate, finely crenate, downy on both sides. Stalk densely downy. Stipule semicordate, flat, toothed, green, and nearly hairless. **s.T.** 4, 5. Norf."

—Smith. *Koch joins both these, as well as* andersoniana, rupestris, *and* forsteriana, *to* nigricans.

44. **nigricans.** Germen downy. (Stalk 2 or 3 times nectary. Style long. Stigmas cloven, Koch.) (L. elliptico-lanceolate, crenate, with a downy midrib above, glaucous beneath. Stamens twice scales, Sm.) (L. ovate, elliptic or lanceolate, undulate, serrate, smooth at last. Stip. semicordate, with a straight point, Koch.) **l.S.** 4. *Fens, osier-grounds, and thickets.* Norf. Heref. Alps. Rhine. Dau. Hamb.

45. **andersoniana.** (Caps. 3 times breadth, smooth. Stalk twice nectary, nearly equal to scale, $\frac{1}{2}$ germen, E. B.) Style long, cloven. Stigma cloven. L. elliptico-oblong, acute, faintly crenato-dentate, glaucous beneath. Stip. small, somewhat ovoid. Branches downy. **S.** 5, 6. *Sides of streams.* Breadalbane. Newcastle.

46. **damascena.** Catkin in flower exceeding floral L. Scales obovate. Germen stalked, naked. Style divided, longer than diverging stigmas. Young Shoots densely hairy. L. ovate or rhomboidal, bluntly toothed, silky when young, at length nearly naked, green on both sides. Stipules semicordate. **S.** 4. s. Sc.

47. **forsteriana.** (Caps. 4 times breadth, silky. Stalk 4 times nectary, equal to scale, $\frac{1}{4}$ germen, E. B.) Style somewhat cloven, as long as emarginate stigma. (Stem erect, branched, downy. L. elliptico-obovate, acuminate, crenate, somewhat downy, glaucous beneath. Stipules vaulted, Sm.) **S.** 5, 6. Scot. Banks of Tyne. Heaton Deane.

48. **rupestris.** (Caps. 3 times breadth, silky (or naked, Borr.). Stalk 3 times nectary, equal to scale, $\frac{2}{5}$ germen, E. B.) Style undivided. Stigma entire. (Stem trailing! L. obovate, acute, serrate, flat, even, silky on both sides. Stip. hairy. Branches downy. **s.S.** 5. *Rocks.* Northumberland. Scot. —Smith.

49. **petræa.** Caps. ovate, nearly sessile, smooth or silky. (Style divided, as long as stigmas. L. elliptico-oblong, serrate, rugose, minutely hoary on the upper surface; glaucous, reticulate, and slightly hairy beneath. Stip. large, E. B.) semicordate, serrate. *Catkin* $\frac{1}{2}$ *in. to* 1 *in. in length.* **S.** 4, 5. Somewhere in Britain. *The Stigmas in E. B. fig. are entire, but are described as cloven.*

50. **propinqua.** "Germen stalked, silky towards the point. Style longer than the notched stigma. Plant erect. Young Shoots minutely pubescent. L. elliptic, obscurely crenate, nearly flat, with slightly sunken veins, nearly naked on both sides, pale green beneath. Stip. small, vaulted, glandulose. **S.** Britain." —Bab.

iii. *Bicolores,* Borrer. (*Germen very silky,* Hooker.)

51. **tenuior.** Catkin slender, lax. Fruit-stalk silky, shorter than acute scale. Style longer than ovoid stigmas. L. on slender stalks, obovato-lanceolate, acute, obscurely crenate, flat, naked on both sides, glaucous beneath. Stip. acute, glandulose. **S.** 5. Banks of *Lochy near Killin.*—Borrer.

52. **laurina.** (Fr. 3 or 4 times breadth. Stalk 4 times nectary, $\frac{2}{3}$ of obtuse, hairy scale, $\frac{1}{2}$ capsule. Style short. Stigma ovoid, E. B.) L. elliptico-oblong, acute, waved and somewhat serrate, nearly hairless, glaucous beneath. Stalk dilated at base. Stipules pointed, serrate. **S.** 4, 5. *Woods and thickets.*—Sm.

53. **laxiflora.** "Catkin loose. Germen short, bluntish, naked in lower part. Style as long as linear, divided stigma. Fr. $2\frac{1}{2}$ breadth. Stalk 3 times nectary, $\frac{1}{2}$ scale, $\frac{1}{2}$ fruit. Plant upright. Young Shoots slightly pubescent. L. naked, flat, broadly ovate, narrowed at base, slightly toothed, glaucescent beneath; upper acute. Stip. small, concave. **S.** 4. Breadalbane."—Borrer.

54. **phylicifolia.** (Caps. 3 times breadth. Stalks 3 times nectary, $\frac{1}{2}$ of obtuse, silky scale, $\frac{1}{2}$ silky germen, E. B.) Style long. Stigma entire or cloven. L. obovate or elliptico-lanceolate: serratures often wavy, hairless, glaucous beneath. **S.** 5. Breadalbane. Brocken. Sudetes.

55. **borreriana.** Catkin lax, stalked, leafy. Fr. 3 times breadth. Stalk twice nectary, $\frac{1}{2}$ of acute, shaggy scale, $\frac{2}{5}$ germen. Stigma linear, cloven. L. broad lanceolate, with shallow, nearly equal serratures, hairless, glaucous beneath. Stip. lanceolate, small. Branches erect. **S.** 4. *High valleys.* Glen Nevis and Breadalbane.

56. **davalliana.** "Capsules lanceolate, smooth or silky. Style as long as bipartite stigma. Scales small, rounded. L. obovato-lanceolate, serrulate, tapering at each end, smooth, somewhat glaucous beneath. **S.** 5. Sc."—Sm.

57. **tetrapla.** Catkin stalked. "Germen ovato-oblong, smooth at base. Stalk equalling

or exceeding scale, $\frac{1}{3}$ germen. Style as long as bipartite stigma. L. elliptico- or obovato-oblong, acuminate, unequally serrate, nearly smooth; glaucous, and with prominent veins beneath. Stip. semisagittate. **S.** 5. Breadalbane."—Sm.

58. **weigeliana.** Germen subulate, silky, at least towards the summit. Stalk 3 times nectary, $\frac{2}{3}$ scale, $\frac{2}{5}$ germen. *Style longer than bipartite stigma.* L. obovate or elliptic, somewhat acuminate, serrulate, smooth, glaucous beneath. Stip. very small. *Branches smooth.* **S.** 4, 5. Breadalb. Yorksh. Westm.—Borr. *Suspected to be the fertile plant of* croweana.

59. **tenuifolia.** Caps. ovate, quite smooth. Stalk very short, 3 times nectary, $\frac{3}{4}$ scale, $\frac{1}{4}$ germen. Style longer than the thick, emarginate stigma. L. elliptico-oblong, often with a twisted point, acute, serrate, nearly smooth, glaucous beneath. Stip. small or none. *Branches downy.* **S.** 5, 6. *Rocky banks of rivers.* Kirby Lonsdale.—Sm.

60. **nitens.** "Germen 3 times breadth, silky. Stalk hairy, shorter than scale. Style longer than stigma. Scale $\frac{1}{3}$ germen. L. ovate or elliptic, acute, unequally serrate, minutely downy above (naked above, Bab.); smooth and glaucous beneath. Stip. semiovate, small and caducous. **S.** 4. Scotland."—Sm.

61. **croweana.** (Caps. ovate, downy. Style long, Sm.) (Caps. nearly smooth, Borrer.) Fil. united. L. obovato-elliptic, somewhat serrate, quite smooth, glaucous beneath. Stip. semicordate. **S.** 4, 5. *Swampy meadows and thickets.* Norf. n. Eng.

62. **bicolor.** "Fil. bearded at base. L. elliptic, green and shining above, smooth and glaucous beneath. Serratures with oblique points. Stip. lunate, serrate. **S.** 5. Scot."—Hooker.

63. **phillyreifolia.** "Germen smooth. Stalk smooth, shorter than oblong, hairy scale. Style as long as stigma. L. elliptico-lanceolate, strongly serrate, naked when fully expanded, glaucous beneath. Stip. small. Young Shoots pubescent. **S.** 4. Sc."—Borr.

64. **dicksoniana.** Germen $1\frac{1}{2}$ breadth, silky. Stalk equal to nectary (which is very large), $\frac{1}{2}$ scale, $\frac{2}{5}$ germen. Style shorter than ovoid, undivided stigma. L. elliptic, acute, slightly toothed, smooth, glaucous beneath. *Young Branches smooth. Catkins ovoid.* **S.** 4. Highlands.—Hooker, *from E. B.*

65. **hastata.** (Germen 4 times breadth, smooth. Stalk equalling nectary, $\frac{1}{2}$ scale, $\frac{1}{3}$ germen. Style long. Stigma small, undivided, E. B.) (Stalk smooth. Catkin on a leafy stalk, Koch) *not so in E. B.* (shaggy ✓ Hooker.) L. broadly elliptic, toothed, waved, thin, quite smooth, glaucous beneath. Stip. large, semicordate. **S.** 4. *Sandy shores,* Barrie near Dundee. *Mr. Borrer puts this with* lanata *in a separate section, depending chiefly on the shaggy and silky catkins and the paper-like substance of L.*

66. **glabra.** Catkin stalked. Germen subulate, on an ovate base. Stalk twice nectary. Style long. Stigma bipartite. Stamens villous to above the middle. L. elliptic or obovate, serrate, smooth, shining; glaucous beneath. Stipules gland-like or none. **S.** 6, 7. *Moist slopes or mountain rivulets.* Bav. Salzb. Carn. Carinthia.—Koch. β Wulfeniana ✓

67. **Hegetschweileri.** "Catkins at last on a leafy stalk. Caps. subulate on an ovate base. Stalk tomentose, twice nectary. Style long. Stigma bipartite. Fil. smooth. L. oval or oblongo-obovate, serrulate; glaucous beneath. Stip. on the younger branches semicordate, with a straight point as long as L.-stalk. Scales permanently villous. **S.** 6, 7. *Mountain valleys.* Sw."—Koch.

G. Arenariæ.

68. **glauca.** Caps. $1\frac{3}{4}$ breadth, very downy, (full twice breadth, J. W.) Stigma nearly sessile, cloven. L. ovato-lanceolate, entire, downy, white and cottony beneath. s.**S.** Clova Mountains. *According to Babington, this is not the* S. glauca *of Linnæus, or of Koch, whose character I here add.*— ✓

glauca. "Catkin on a long, leafy stalk. Caps. ovato-lanceolate, tomentose. Stalk equalling nectary. Style cloven. Stigma long, cloven. L. lanceolate or elliptic, quite entire, grey beneath, silky on both sides, at last becoming smooth; lower very obtuse. Stipules ovate, acute, straight. **S.** 6, 7. *Very high.* s. Sw."—Koch.

69. **arenaria.** "Caps. $2\frac{1}{2}$ times breadth, downy. Style very long. Stigma linear, often entire. L. oblongo-lanceolate, entire, downy, especially beneath. (Scales acute, E. B.) s.**S.** 6. *Mountains.* Breadalbane. Clova."—Hook. Sudetes. ✓

70. **stuartiana.** Caps. woolly, $2\frac{1}{2}$ times breadth. Style long. Stigma capillary, deeply divided. L. ovato-lanceolate, acute (sharp at

each end, Borr.), nearly entire, shaggy above, silky beneath. Scales acute. **s.S.** 7. *Mountains.* Sc. *These two form the* Lapponum *of Koch. Babington also puts them together.*

H. Vacciniifoliæ. *Anthers yellow or brown when empty. Catkins nearly sessile. Stalks of Capsules shorter than glands.*—Hooker. *I find the Scales frequently of one colour throughout.*

71. **pyrenaica.** Fertile Catkins long, somewhat stalked. Germen ovate, tomentose, sessile. Stem creeping. L. obovate, obtuse, or mucronulate, quite entire, nearly sessile, ciliate, silky when young. **s.S.** *Snowy.* Pyr.—Duby. *Query if this is not more allied to* retusa.

72. **arbuscula.** " Catkins on leafy stalks. Caps. ovoideo-conical, tomentose, sessile, afterwards on a very short stalk. Style long, often cloven to the middle. Stigma cloven. L. lanceolate or ovate, acuminate, toothed, shining above, glaucous beneath. **s.S.** 6, 7. Alps." —Koch.

73. **vacciniifolia.** (Catkins leafy, nearly sessile. Germen $2\frac{1}{2}$ times breadth, sessile, E.B.), silky. (Style short. Stigma cloven, E.B.) L. lanceolato-ovate, serrate, smooth above, glaucous and silky beneath when young. Stems decumbent. **s.S.** 4 *in gardens,* 6 *on mountains.* Highlands.

74. **carinata.** (Catkins on short, leafy stalks. Germen $2\frac{1}{2}$ times breadth, E. B.), sessile, very silky. Style very short. Stigmas cloven. L. ovate, serrate, smooth, glaucous beneath, often folded. **s.S.** 6. *Highlands.*

✓ 75. **prunifolia.** Catkins hardly leafy. (Germen 3 times breadth, E. B.), sessile, very silky. Style short. Stigmas emarginate. L. ovate, serrate, veiny, hairless, glaucous beneath. **s.S.** 4–6. *Highlands.*

76. **venulosa.** (Catkins on short, leafy stalks. Germen $2\frac{1}{2}$ times breadth, sessile, E. B.) (silky. L. ovate, serrate, naked, reticulate, somewhat glaucous beneath. Stem erect, Sm.) (Style very short. Stigma cloven, E. B.) **s.S.** 4–6. *Highlands. These five, according to Babington, form the* arbuscula *of Koch.*

I. Repentes.

✓ 77. **myrtilloides.** " Catkins on long, leafy stalks. Scales hairless or ciliate. Caps. lanceolate, on an ovate base, smooth. Stalk 4 or 5 times nectary. Style short. Stigma ovoid, emarginate. L. cordato-ovate, oblong or lanceolate, quite entire, dull, hairless, reticulate beneath. Stip. semiovate. **s.S.** 5, 6. *Boggy.* Sil. Bav."—Koch.

78. **ambigua.** " Catkins nearly sessile, with small L. Caps. lanceolate, on an ovate base. Stalk 3 or 4 times nectary. Style short (more or less elongated, Hooker). Stigmas ovoid, emarginate. L. elliptico-obovate (obovato-oblong, serrate towards the top, Hooker), or lanceolate; recurved, apiculate, rugose, venose beneath, at first silky. Stip. straight, semiovate. **s.S.** 4, 5. *Boggy meadows.* G."—Koch.

α. Stigmas nearly sessile. L. hairy or silky. Epping Forest. Suffolk. Sc.

β. Style long. L. oblong. Suff. Scot. *This is the* spatulata *of Willd.,* versiflora *of Wahl., and, according to Fries, the true* fusca *of Linnæus.*

79. **fusca** (*repens* of Koch). Catkins nearly sessile, leafy. Caps. lanceolate, from an ovate base. Stalk 3 or 4 times nectary. Style moderate. Stigma ovoid, cloven. L. oval, elliptic or lanceolate, entire, or with minute glandular serratures and a recurved point, shining above, glaucous and silky beneath. Caps. tomentose or hairless (very silky, Hooker). **s.S.** *Peaty heaths.*

α. fusca. Catkins ovate, on short, somewhat leafy stalks. Stem erect.

β. repens. Catkins ovate, on short stalks, hardly leafy. Germen $2\frac{1}{4}$ times breadth. Stalk twice nectary, $\frac{2}{5}$ scale, $\frac{1}{2}$ germen. Style short. Stem depressed.

γ. prostrata. Catkins on leafy stalks. Germen twice as long as broad, nearly sessile. Stem prostrate. Style short.

δ. adscendens. Catkins sessile, not leafy. *This is also* fœtida *and* parvifolia *of 'Eng. Botany.'*

ε. incubacea. L. elliptico-oblong. Stip. stalked, ovate, acute.—Bab.

ζ. argentea. Fertile Catkins on long, leafy stalks. Germen 4 times breadth. Stalk 4 times nectary, $\frac{3}{4}$ scale, $\frac{2}{3}$ germen.

These varieties are mostly made out from Eng. Bot. The last differs in characters which in other instances among the Willows are deemed important.

K. Rosmarinifoliæ.

80. **doniana.** " Monadelphous. Catkins erect, cylindrical, somewhat stalked in fruit, and with small L. Caps. ovato-conical, tomen-

tose. Stalk twice nectary ($\frac{1}{2}$ scale, $\frac{1}{6}$ germen). Style very short. Stigmas short, emarginate. L. obovato-lanceolate, acute, straight at top, serrate, shining above, and at first somewhat silky beneath."—Koch. (Stip. linear. Branches erect, Hooker.) **s.S.** 5. Scotland. *Margins of moist meadows.* (At Steinfurt in Westphalia, Koch.)

81. **rosmarinifolia.** " Catkin of Fr. nearly globular, on short, leafy stalks. (Caps. 3$\frac{1}{2}$ times breadth.) Stalk 2 or 3 times nectary, ($\frac{1}{2}$ scale, $\frac{2}{5}$ germen, E. B.) Germen tomentose. Style short. Stigma ovoid (linear, Hooker), cloven. L. lineari-lanceolate, entire or with a few glandular teeth, straight at the top; silky beneath. Stip. lanceolate. Stem erect. **s.S.** 4, Sc.? *Boggy meadows.* n. G."—Koch.

82. **angustifolia.** Catkins ovate (cylindrical, Koch), erect, (on a short, leafy stalk, E. B.) (silky or smooth, Koch). Caps. 2 or 3 times breadth. Stalk $\frac{1}{4}$ scale, $\frac{1}{4}$ germen, (2 or 3 times nectary, Koch,) (shorter than the nectary, E. B.) (Style about as long as stigma, Hooker) (very short, E. B.) Stigmas ovoid (cloven, Koch) (entire, Hooker and E. B.) L. lineari-lanceolate, with a straight acumen, silky beneath when young. Margin somewhat revolute, with a few glandular teeth. Stip. lanceolate. **s.S.** 4. *Boggy meadows.* n. Germany. lower Austria. Carn. Carin. Clova.

Sect. III. *Catkins terminal.*

L. Myrsinites. *Catkins really or apparently terminal,* Babington.

83. **cæsia.** Stalk of Catkin short, leafy. Germen ovato-conical, tomentose, nearly sessile. Style various. Stigma ovato-oblong, entire or cloven. L. elliptic or lanceolate, acuminate, quite entire, hairless, glaucous and dull on both sides. Margin revolute.—Koch. **S.** 6, 7. *Very high.* Enzandaz near Bex. *I doubt if this should not rather be placed with* Vacciniifoliæ.

84. **jacquiniana.** Stalk of Catkin long, *equalling catkin,* leafy at base. Germen lanceolate, acuminate, on an ovate base, nearly sessile, villous. Style long. Stigma linear, entire, or cloven. L. elliptic or lanceolate, reticulato-venose, green and shining on both sides, quite entire, at last hairless, except for the cilia. *Differs from Sp.* 85 *only in its entire L.* **S.** 6, 7. *High.* G. Alps.

85. **myrsinites.** Catkins on long stalks, leafy only at the base. Germen 3 times breadth (4 times, E. B.), sessile, woolly, at last smooth. Style long (none, E. B.). Stigma linear, entire or cloven. L. elliptic or lanceolate, reticulato-venose, green and shining on both sides, at last smooth. Margin with glandular serratures. **s.S.** 6, 7. *High and moist.* Sw. Sty. Highlands. ✓

86. **procumbens.** Catkins on leafy stalks. Stalk twice nectary, $\frac{1}{3}$ scale, $\frac{1}{6}$ germen. Germen 4 times breadth, nearly sessile, lanceolate, silky. Style very short, bipartite. Stigma short, cloven, obtuse. L. oval, sometimes acute, crenate, somewhat serrate, shining, quite smooth. **s.S.** 6. *Mountains.* Sc.

M. Reticulatæ.

87. **reticulata.** Caps. ovate, nearly sessile, downy. Style short. Stigma cloven. L. on long stalks, elliptico-orbicular, reticulate and glaucous beneath; at last smooth. Margin revolute, entire. **w.** 6, 7. *High moist rocks.* Sc. Alps. Pyr. ✓

N. Glaciales.

88. **lanata.** Catkin without bracts, sessile, clothed with long, yellow, silky hairs. Germen lanceolate, nearly sessile (oblong, quite sessile, Sm.), hairless. Stigma undivided. (Style as long as germen, 4 times as long as the blunt, divided stigmas, Sm.) (Barren Fl. from lateral buds, Sm.) L. broad, oval, acuminate, entire, shaggy, glaucous beneath. **s.S.** 5. Head of Glen of Dole, Angusshire. ✓

89. **retusa.** Caps. twice breadth, ovato-conical, smooth. Stalk $\frac{2}{3}$ scale, $\frac{2}{5}$ capsule, equalling nectary. Style forked, moderate. Stigma cloven, oblongo-linear. L. on short stalks, obovate or oblongo-cuneate, quite smooth, very entire; veins parallel, prominent. **s.S.** 7, 8. *High rocky.* Alps.—Koch. ✓

90. **herbacea.** Caps. 2$\frac{1}{2}$ times breadth. Stalk shorter than nectary. Style short. Stigma cloven. L. suborbicular, serrate, reticulate, hairless, shining on both sides. **w.** 7, 8. *High. Should not this go near* S. myrsinites? *Scales in general slightly darker towards the tip, ciliate, otherwise hairless. In barren specimens from the Brecon Van they are not at all darker, and the Fil. seem united.* ✓

731. POPULUS.

A. *Stamens* 8.

1. **alba.** L. subrotundo-ovate, angulato-dentate, downy and very white beneath. Young Shoots white and cottony. Scales of the fertile Catkin lanceolate, crenate at top. Stigmas 4. **l.T.** 4. *Moist clay.*

2. **canescens.** L. subrotundo-ovate, angulato-dentate, hoary beneath. Shoots cottony, whitish. Scales of fertile Catkin cloven at top. Stigmas 8. **l.T.** 3, 4. *Moist gravel or sand.*

3. **tremula.** L. nearly orbicular, dentato-sinuate. Root-shoots hairy; upper smooth. Scales of fertile Catkin digitate, incise. Stigmas 4, auricled. **s.T.** 3, 4. *Moist woods.*

B. *Stamens* 12–30. *Shoots all smooth.*

✓ 4. **nigra.** L. triangular, acuminate, serrate; angles rounded; margin smooth. Branches spreading. Stigmas 4. **l.T.** 4. *Wet banks.*

✓ Besides these, we have, planted in public walks and on road-sides, *P. pyramidalis* or *dilatata*, the common Lombardy Poplar, with erect branches, and *P. monilifera*, with a downy margin to the L., both in this division.

Tribe III. *BETULINEÆ.*

732. BETULA.

✓ 1. **alba.** L. deltoideo-ovate, acute, doubly serrate. Catkin of Fr. pendulous. Wing twice as broad as seed, and reaching to extremity of stigmas. (Fr. shorter than the rounded membranous margin, Bab.) **T.** 4, 5. *Sandy or gravelly woods.*

✓ 2. **pubescens.** "L. ovate or rhombic (cordato-ovoid, Bab.), acute or acuminate, doubly serrate. Catkin of Fr. pendulous. Wing as broad as seed, and reaching to its extremity. (Fr. broadly obovate, as long as rounded membranous margin, Bab.) **T.** 4, 5. *Wet and boggy.*"—Koch.

✓ 3. **intermedia.** "L. subrotundo-ovate, acutely and somewhat doubly serrato-crenate. Catkin of Fr. stalked. Stalk full ½ as long as catkin. Scales trifid: lateral Div. shorter and broader than the middle. Wing usually as wide as seed. **S.** 5, 6. *Bogs.* Jura."—Koch.

✓ 4. **humilis.** "L. subrotundo-ovate, unequally and acutely crenato-serrate. Catkin of Fr. erect, much longer than its stalk. Scales trifid. Div. nearly equal. Wing half width of seed. **S.** 4. *Boggy.* Upper Swabia. Salzb. n. e. G."—Koch.

✓ 5. **nana.** L. nearly round, obtusely crenate. Catkin of Fr. erect, sessile. Scales trifid. Div. nearly equal. Wing half width of seed. **s.S.** 5. *Cold mountain bogs.* Sw. G. Sc.

733. ALNUS.

1. **viridis.** Perianth of barren Fl. of 3 L. Seeds with broad membranous margins. L. ovate, acute, with sharp double serratures, one-coloured, hairy in the veins beneath. **S.** 5, 6. *Granite.* Alps."—Koch.

2. **cordifolia.** Seeds with a narrow, distinct, but not membranous margin. L. cordate, serrate. **T.** 5. *Woods.* Nap.

3. **pubescens.** Perianth of barren Fl. 4-cleft. Seeds with a thin edge, but without a distinct margin. L. subrotund or obovate, crenato-serrate, green on both sides. **l.S.** 3. *Moist.* Boh. Carlsruhe.—Koch.

4. **incana.** Perianth 4-cleft. Seeds not margined. L. ovate, acute, with sharp double serratures, glaucous and somewhat downy beneath. **l.S.** 2, 3. *Sides of streams.* Alps. c. Ger. Hartz. Apenn. ✓

5. **glutinosa.** Perianth 4-cleft. Seeds not margined. L. subrotund, very blunt, cuneate at base, hairless except on the axils of the veins beneath. **s.T.** 3, 4. *Wet.*

Tribe IV. *PLATANEÆ.*

734. PLATANUS.

1. **orientalis.** L. palmate: divisions lanceolate, sinuate. Stip. nearly entire. **l.T.** *Introduced for ornament, but wild in the woods at* Nicastro in Cal., *and in those of the* s. and e. of Sic.

2. **cuneata.** "L. 3–5-lobed, dentate, extensively cuneate at base, at last hairless. **s.T.**"—Willd. "Torrent of Staffoli in the Cilento, Lucania."—Ten.

3. **acerifolia.** "L. cordate, 5-lobed, remotely toothed, truncate (not cuneate) at base. Nerves branching on the edge of the L. **l.T.**" —Willd. "*Woods* of Abruzzi."—Ten.

We find also in public walks *P. occidentalis*, with 5-angular L., hardly lobed, and a cuneate base.

Tribe V. *MYRICEÆ.*

735. MYRICA.

1. **Gale.** L. somewhat cuneato-lanceolate; upper part serrate. Scales of the Catkin acuminate. **s.S.** 5. *Bogs.* ✓

XCV. CONIFERÆ.

Flowers separate. *Barren*, with 1 Stamen, or several Stamens with united Filaments, collected into a deciduous Catkin. *Fertile Flowers* solitary or in cones. Ovules naked, pitcher-like, open at top; or in a scale-like Carpel arising from the axil of a bract, or inserted in the base of the scales of a catkin. In *Ephedra* they are surrounded by an involucrum. Cotyledons 2 or more, verticillate.

736. EPHEDRA.

1. **distachya.** Barren Catkins in stalked clusters; fertile 1–3, on opposite stalks. **s.S.** 5, 6. *Sandy shores.* s. Fr. s. It. *rocks.* Vall. s. Tyrol.

2. **nebrodensis.** "Stems twisted: joints somewhat separating. Branches slender, crowded. All Catkins sessile: *barren* solitary, or several together; *fertile* solitary, opposite, or scattered. **w.** 5, 6. *Stony hills.* Madonie. *occ.*"—Guss.

3. **fragilis.** (Stems climbing, Guss.) Joints easily separating. Branches numerous. Barren Catkins numerous, crowded, sessile; fertile sometimes solitary, on short stalks. **w.** 4, 5. *Sandy shores.* Girgenti.

737. TAXUS.

1. **baccata.** L. in two ranks, crowded, linear, acute. Fertile flowers axillary, sessile. **l.** evergreen **T.** 3, 4. *Hill woods.* Eng. Norm. Jura. Abr. Alps.

738. JUNIPERUS.

A. *L. widely spreading.*

1. **nana.** L. 3 in a whorl, incurved, lineari-lanceolate, pungent, channeled, and obtusely keeled. Berry ovoid, equalling the L. **s.S.** 7, 8. *Rocky mountains.* Alps. Boh. Sicily.

2. **communis.** L. 3 in a whorl, linear, somewhat pungent, channeled, obtusely keeled. Berry hardly half as long as L. **S.** 5. *Dry heaths.*

3. **Oxycedrus.** L. 3 in a whorl, with 2 furrows above, and an acute keel beneath, pungent, ascending. Differs from Species 4 in having a much smaller, and shining red fruit. —Koch. **s.T.** Abr. Garg. mdt. Fr. Istr.

4. **macrocarpa.** L. 3 in a whorl, linear, acuminate, pungent, with 2 furrows above, and an acute keel below. Fr. ovate or globose, pruinose, as long as or longer than L.—Koch. **l.S.** 5. Fiume. K. Nap. Rome.

5. **Lobelii.** L. 3 in a whorl, lineari-subulate, pungent, with 2 furrows above, and an obtuse keel beneath. Fr. oval, attenuate, exceeding L. **S.** 12, 1. *Sandy shores.* s. and e. Sicily.

B. *Leaves closely tiled.*

6. **turbinata.** L. ovate, all tiled in 4 rows, with an oblong furrow on the back: the younger somewhat acute, approximate. Berry top-shaped and tubercled. **S.** 10, 11. *Sandy and rocky shores.* Monte Allegro. Secciara. Sicily.

7. **phœnicea.** L. ovate, tiled in 6 rows (4, Guss.), with a furrow on the back. Berries spreading, spherical, brownish-red. **S.** 5. *Shores* of Mdt.—Koch.

8. **Sabina.** L. rhomboid or lanceolate, acute, tiled in 4 rows, with a gland on the back. Berrries on a recurved stalk, blue. **S.** 4, 5. *Mountains.* Vall. s. Tyr. Cal.

CUPRESSUS.

Cupressus sempervirens, with branches 4-edged, erect; L. obtuse, tiled in 4 rows; Cone nearly globose, with umboid, pointless scales, is frequent in public walks in s. Europe.

739. PINUS.

A. *L. in pairs.*

1. **halepensis.** Cones of a year old cernuous, on stalks as long as themselves. Shield of a mature cone slightly convex. Wing at least twice as long as nut. L. filiform. Branches spreading. **T.** 3. *Coasts.* mdt. Fr. It.

2. **sylvestris.** Cones of the year cernuous, stalked. Shield of a mature cone with sharp edges; point somewhat deflexed. Wing 2 or 3 times nut. L. glaucous. Buds ovate, prolonged. **l.T.** 5. *Mountain woods.*

3. **Mughus.** Cones of the year erect. Stalk short. Shield of mature cone with a hori-

zontal edge; point somewhat deflexed. Wing 2 or 3 times nut. Lower Buds oblong, obtuse, or abruptly acute. **T.** 5. *Mountains, chiefly calc.* G. Sw. Dau.

- α. *uliginosa.* An erect Tree. *Boggy valleys.*
- β. *humilis.* Ascending, branched from base. e. Ger.

4. **Laricio.** Cones of the year erect. Stalk very short. Shield of mature cone convex. Wing 3 times nut. Lower Buds acuminate. **l.T.** 5. *Woods, chiefly calc.* e. G. Cors.

5. **uncinata.** Cones of the year erect, on short stalk. Shield of mature cone with a long, recurved beak. Wing 3 times nut. Lower Buds oblong, obtuse, or abruptly acute. **s.T.** 6, 7. *High.* Sw. Alps. Pyr.

✓ 6. **maritima.** Cones of the year spreading, nearly sessile. Shields of mature cones with a sharp, projecting, horizontal edge; point not deflexed. Wing 2 or 3 times nut. Scales of lower Buds squarrose! **T.** 4. *Coasts* of Mdt. Fr. and It.

7. **Pinea.** Cones of year nearly erect. Stalk short. Shield of mature cones convex, not angular. Wing not half as long as nut. Scales of lower Buds squarrose! **l.T.** 5. *Coasts.* Mdt.

B. *L.* 3–5 *in each sheath.*

8. **Cembra.** Cones ovoid, nearly sessile. Scales spreading at top. No Shield. Nuts wingless. L. 3-edged. **T.** 6. *High.* Alps.

9. **Strobus.** Cones drooping, oblongo-cylindrical, exceeding L. Scales lax! L. slender. Sheaths deciduous. **T.** 5, 6. *Sometimes planted in woods.*

C. *All L. solitary, evergreen.*

10. **pectinata.** L. emarginate, with 2 white lines beneath, pectinate. Scales of the erect Cone very blunt, adpressed. **l.T.** 5. *Mountain woods.* Ger. Fr. Sw. It.

11. **Abies.** L. compressed, somewhat 4-edged, mucronate. Cones cylindrical, pendulous. Scales eroso-denticulate. **l.T.** 5. *Mountain woods.*

D. *L. fascicled and solitary, deciduous.*

12. **Larix.** L. somewhat channeled. Cones ovoid, erect. Scales very obtuse, lax at the top. **l.T.** 5. *Mountain woods.* Alps. Ger. ✓

MONOCOTYLEDONES.

XCVI. HYDROCHARIDEÆ.

Sepals 3, herbaceous. Petals 3, regular, coloured. Ovary inferior. Seeds many. Styles 3–6. Fruit not bursting. Albumen 0. Flowers diœcious.

740. STRATIOTES.

1. **aloides.** L. ensiformi-triangular, aculeato-ciliate. **p.** 7, 8. *Stagnant water.* Bord. Belg. n. and e. G. e. Eng.

741. HYDROCHARIS.

1. **Morsus-Ranæ.** L. floating, reniform. **p.** 7, 8. *Stagnant.*

ANACHARIS Rich

742. UDORA.

alsinastrum Bab

1. **occidentalis.** L. lanceolato-linear, straight, serrulate, with a fine mucro. **p.** 9. Damschen See near Stettin, Pom. Leicestershire.

743. VALLISNERIA.

1. **spiralis.** All L. radical, grass-like. Rhone near Arles. Canal of Lang. Lakes of Guarda and Lucarno. ✓

XCVII. ALISMACEÆ.

Sepals 3, herbaceous. Petals 3, regular. Ovaries 3–6, superior, each terminating in a Style, and with 1 or 2 seeds. Fruit not bursting.

744. ALISMA.

1. **Plantago.** L. ovate, acute. Caps. obtuse, disposed in an obtuse triangle round a centre. **p.** 7, 8. *Water.*

β. lanceolatum. L. lanceolate.

γ. graminifolium. Nearly all L. linear, floating.

2. **ranunculoides.** L. lineari-lanceolate. Caps. numerous, angular, acute, in a globular head. **p.** 8. *Wet. occ.*

β. repens. Caps. compressed.

3. **natans.** L. ovate or oblong. Root-L. linear, sessile. Caps. 6–12, striate, rostrate. **p.** 6–8. *Still water.* Wales. Cumberland. m. and w. Fr. n. and w. G. *Smith considers the root-L. as mere L.-stalks.*

4. **parnassifolium.** L. exactly cordate, 9-nerved. Caps. terminated by the long permanent style. **p.** 6, 7. *Still water.* Dau. Berlin. Mecklenburg. Boh. Pdm.

5. **Damasonium.** L. cordato-oblong. Caps. 6, 3-edged, subulate, acuminate, disposed in a star. **p.** 5, 6. *Pools, occ. Not in Ger.*

745. SAGITTARIA.

1. **sagittifolia.** L. deeply sagittate: lobes lanceolate, straight. Scape simple. Fl. in whorls. **p.** 6, 7. *Stagnant.* m. Eur. ✓

746. BUTOMUS.

1. **umbellatus.** Scape supporting a bracteate Umbel of many *purplish flowers.* **p.** 6–8. *Still water.* ✓

747. SCHEUCHZERIA.

1. **palustris.** L. semicylindrical, obtuse, with a minute pore on the upper side at the tip. **p.** 5, 6. *Bogs.* Yorksh. Vosges. G. ✓

748. TRIGLOCHIN.

1. **palustre.** Caps. nearly linear, of 3 ✓

cells, tapering at the base. Valves acuminate. Root fibrous, with hardly any bulb. L. channeled. **p.** 6, 7. *Moist and boggy meadows.*

2. **laxiflorum.** Bulb ovate, closely covered with anastomosing fibres. Caps. conoideo-subulate, 3-celled. Valves obtuse. L. flat. **p.** 9–11. *Mountain meadows and sea-shore.* Sic. Cors. Var. of Sp. 3 ?

3. **Barrelieri.** Bulbs clustered, oblong. L. semicylindrical, channeled. Caps. conico-subulate, 3-celled, striate. Valves obtuse. **p.** 4, 5. *Salt marshes.* It. w. Fr.

4. **maritimum.** L. semicylindrical. Caps. ovate, of 6 cells. **p.** 6, 7. *Salt marshes.*

XCVIII. ERIOCAULEÆ.

Flowers separate in the same head. Perianth glumaceous, 2–6-partite. Stamens 2–6. Ovary superior, 2–3-celled. Ovules solitary. Dehiscence of Capsule between the partitions. Seeds coated with wings or rows of hair.

749. ERIOCAULON.

1. **septangulare.** Scape 7-edged. L. acuminate, cellular. Barren Flowers of 1 petal and 4 anthers. **p.** 8. *Peaty lakes.* Skye. Connemara.

XCIX. POTAMEÆ.

Flowers complete (except in *Zannichellia*). Perianth inferior, 4-parted, or 0. Stamens 1, 2, or 4. Ovaries 1 or 4, distinct, each crowned with the pistil, and containing 1 seed. Fruit not bursting. No Albumen.

750. POTAMOGETON.

"The fruit of Potamogeton shrivels variously, and puts on different appearances in drying. It is, therefore, the fresh fruit which is to be attended to, and which is always meant in the following descriptions, unless the contrary is mentioned."—Koch (whom I have generally followed in this genus).

A. L. all stalked; uppermost opposite, floating.
  i. Flower-stalks in the axils of the coriaceous floating leaves only. Sp. 1–5.
  ii. Flower-stalks also in axils of submersed L. Sp. 6–11.

B. L. all similar, alternate, membranous, not floating on the surface.
  i. L. lanceolate or broader. Sp. 12–18.
  ii. L. linear or narrower.
    a. Stipules free. Sp. 19–24.
    b. Stipules joined to L. Sp. 25–27.

C. L. all similar and opposite. Sp. 28.

A. *Lower L. alternate; uppermost opposite, floating, coriaceous: all stalked.*

i. *Flower-stalks from floating L. only.*

1. **natans.** Fr. about 2 lines long, round at back. Floating L. ovate or elliptic. Stalk flat, or hollow on upper surface. Lower L. very narrow, sometimes setaceous (perishing before the flowering, Koch). **p.** 6, 7. *Still water. According to Koch, all the L. are stalked. Sm. says that the lower are sessile.*

2. **oblongus.** Fr. about 1 line long. Back round. Floating L. elliptico-oblong; (upper somewhat cordate, Koch.) Stalk flat, or hollow on upper surface. Lower L. lineari-lanceolate (remaining at time of flowering, Koch). **p.** 7. *Boggy.*

3. **fluitans.** Edges of Fr. subacute. Floating L. oval, or oblongo-lanceolate, without a fold at the base. Stalks convex above. Fruit-stalk cylindrical. **p.** *Rivers.* Sw. northern Rhine. *According to Nolte, the Spike-stalk is thickened and hollow; but this is not admitted by Koch.*

4. **spatulatus.** Edges of Fr. acute. Submersed L. very attenuate into a long stalk. Floating L. ovali-oblong, protracted at the base. **p.** 7, 8. *Clear streams.* Kaisersleuten and Zweibrücken. Bitche, Lorr.

5. **plantagineus.** Edges of Fr. obtuse. All L. stalked and membranous, smooth on margin. Submersed L. lanceolate. Floating L. somewhat cordate. Spike-stalks cylindrical. **p.** 7, 8. *Stagnant.* Westphalia. Rhine.

ii. *Lower L. permanent; upper floating, not always present till late in the summer. Flower-stalks from both.*

6. **rufescens.** Edges of Fr. acute. Submersed L. lanceolate, sessile, somewhat obtuse. Margin smooth. Floating L. somewhat coriaceous, obovate, tapering into a stalk shorter than itself. Spike-stalk cylindrical. **p.** 7, 8. *Still water.* G.

7. **variifolius.** Submersed L. lineari-lanceolate, somewhat cuspidate: margin smooth. Floating L. lanceolate, tapering into stalk. Spike-stalk cylindrical. **p.** 7. *Streams.* Gasc., THORE. Quimper, J. W.

8. **lanceolatus.** "Submersed L. lanceolate, sessile, narrowed at both ends, entire, not apiculate. Floating L. somewhat coriaceous, elliptico-lanceolate. Stip. lineari-lanceolate, acute; uppermost broader. Fr.-stalk cylindrical. Submersed L. with chain-like reticulations near the midrib. **p.** 7, 8. *Small streams.* Anglesea. Sc."—BAB.

9. **heterophyllus.** Edges of Fr. obtuse. Submersed L. lanceolate, margin rough; lower sessile. Floating L. ovate or lanceolate, on long stalks. Spike-stalks thicker upwards. *Lower L. lanceolate, recurved.* **p.** *Still water.* G.

β. *graminifolius.* Lower L. lanceolato-linear, attenuate at both ends.

γ. *Zizii.* Much larger than the preceding. L., especially the upper, obtuse, mucronate. Margin undulate.

10. **nitens.** Fr. keeled when dry. Submersed L. rounded at base and semiamplexicaul; rough on margin. Floating L. elliptic, attenuate. Spike-stalk somewhat thicker upwards. **p.** 7, 8. *Still.* n. G.

α. *salicifolius.* Submersed L. lineari-lanceolate, straight.

β. *heterophyllus.* Submersed L. lanceolate or ovato-lanceolate, recurved.

11. **augustanus.** "Lower L. broadly lanceolate, stalked; upper lineari-lanceolate, sessile, acuminate: all pellucid, 5–7-nerved, and veiny. Spike on a very long stalk. **p.** 7, 8. Aosta."—BERT. *Koch unites this to* heterophyllus; *from which, however, and all others, it seems essentially to differ, in its broad and stalked lower L., and narrower sessile upper. It is not clear from Bert. that it has any floating L.*

B. *All L. submersed. Floral L. opposite; all others alternate.*

i. *L. lanceolate or broader.*

12. **lucens.** Edges of Fr. obtuse, with a slight keel. L. stalked, lanceolate, cuspidate. Margin rough. Spike-stalk thickened upwards. **p.** 7, 8. *Water.*

13. **longifolius** of GAY. "L. pellucid, long lanceolate, narrowed below, quite entire, apiculate. Stip. winged. *Fr. unknown.* Spike-stalk very long, swelling upwards. Spikes with a few subverticillate distant flowers. **p.** 8. *Deep water.* Loch Corrib."—BAB.

14. **siculus.** "L. oblongo-lanceolate, attenuate at each end, stalked; lower alternate: all smooth on margin. Stip. intrafoliaceous, amplexicaul, acute. Spikes and Stalks slender. Stalks much exceeding L. **p.** 5, 6. *Pools.* Gurgo di Caccaci."—GUSS.

15. **decipiens.** L. all pellucid, ovate or oblong, rounded at base, sessile, mucronate, not hood-like at top. Margin smooth. Spike-stalks cylindrical. *Fr. unknown.* **p.** 7, 8. *Rivers.* Hamb. Holst.

16. **prælongus.** Fr. with a winged keel. L. oblong or lanceolate, rounded at base, amplexicaul, hooded at the tip, obtuse: margin smooth. Spike-stalk cylindrical. **p.** 7, 8. *Still.* n. G. Sw. Carn. Eng.

17. **perfoliatus.** Edges of Fr. obtuse. L. cordato-amplexicaul, rough on margin. **p.** 7, 8. *Ponds and rivers.*

18. **crispus.** Fr. compressed, rostrate. (L. lanceolate, rather obtuse, wavy, serrate, SM.) (L. linear-oblong, obtuse, with acumen, KOCH.) Spike-stalks cylindrical. **p.** 6, 7. *Water.*

ii. *L. linear or narrower, sessile. Stem much branched.*

a. *Stipules separate from leaf.*

19. **acutifolius.** Stem compressed, winged. L. cuspidate, with 3–5 parallel nerves and numerous finer intermediate ones. Spikes subrotund, 6-flowered, nearly as long as stalk. **p.** 7, 8. *Still water.* G. *occ.* s. Eng.

20. **obtusifolius** (*gramineum* of Smith). Stem compressed: margin rounded. L. mucronulate, 3–5-nerved, without intermediate parallel veins. Spike 6–8-flowered, as long as stalk. **p.** 7, 8. *Lakes and ponds.* G. *occ.* Eng. *rare.*

21. **compressus** (*cuspidatum* of Sm.). L. mucronate, many-nerved, of which 3 or 5 are stronger: lateral nerves approaching margin. Stem compressed, somewhat winged. Spike 10–15-flowered, shorter than its stalk. **p.** 7, 8. *Still.* Yorksh. Sc. G.

22. **pusillus.** Stem nearly round. L. somewhat acute, mucronulate, with 3–5 equidistant nerves. Spike 4–8-flowered, interrupted, $\frac{1}{2}$ or $\frac{1}{3}$ as long as stalk. Fr. obliquely elliptic. **p.** 7, 8. *Still water.*

α. L. nearly a line broad, compressed.—Sm.

β. L. about $\frac{1}{2}$ line broad.

γ. *tenuissimus.* L. very narrow.

23. **zosteræfolius.** Stem flattened. L. linear, acuminate, with 3 principal nerves, and close parallel intermediate ones. Spikes cylindrical, on long stalks. Fr. obovoid, keeled. Style terminal. **p.** 6. *Rivers and lakes.* e. Sc.—Bab. *Koch unites this with* P. compressus.

24. **trichoides.** Stem nearly round. L. setaceo-linear, acuminate, 1-nerved, veinless. Stalk 2 or 3 times as long as 4–8-flowered spike. Fr. semiglobose. **p.** 7, 8. *Water.* Sil. Berlin. Bremen.

b. *L. linear, all alternate, with sheath at base, united to stipules. Stem much branched.*

25. **marinus.** Fr., when dry, rounded on the back. L. lineari-setaceous, acute, 1-nerved, with thick cross veins. Spikes on long stalks. **p.** 7, 8. *Salt marshes.* G. *rare.* Eng.

26. **pectinatus.** Fr., when dry, obtusely triangular on the back. L. lineari-setaceous, acute, 1-nerved, with thick cross veins. Spikes on long stalks. **p.** 7, 8. *Still water.*

27. **zosteraceus.** Fr. large, rounded on the back, but with a prominent keel when dry. L. linear, acuminate, 3-nerved, with connecting veins. Lateral Nerves near the margin. **p.** 7. *Still water.* Serpentine in Hyde Park. —Bab.

c. *All L. similar, opposite.*

28. **densus.** L. lanceolate, amplexicaul. Spikes on short stalks, recurved after flowering. Dry Fr. rostrate, compressed, with a broad keel. **p.** 7, 8. *Water.*

β. *oppositifolius,* Duby; *serratum,* Linn. L. triangulari-ovate.

γ. *lancifolius,* DC.; *setaceum,* Linn. L. very narrow.

751. RUPPIA.

1. **maritima.** Cells of the Anthers (*sacculi*) oblong. Fr. ovate, erect, somewhat oblique at base. **p.** 7, 8. *Stagnant water in salt marshes.*

2. **rostellata.** Cells of the Anthers nearly globose. Fr. curved, ascending from an obtuse base. **p.** 8, 9. *Ditches in salt marshes.*

3. **spiralis.** "Differs from *rostellata* in the very long Fl.-stalks, which afterwards become closely spiral at the base."—Gay. I have no further description.

752. ZANNICHELLIA.

1. **polycarpa.** Fr. nearly sessile, four times as long as style. **p.** 7–9. *Sea.* n. G.

2. **palustris.** Fr. on short stalks, twice as long as style. **p.** 7–9. *Fresh water.*

3. **pedicellata.** Fr. on pretty long stalks, as long as slender style. **p.** 7–9. *Brackish water.* n. G.

753. NAIAS.

1. **major.** L. linear, repando-dentate. Teeth mucronate. Sheaths quite entire. Cal. of barren flower 2-lobed. **a.** 8, 9. *Still water.* G. *occ.* Fr.

2. **minor.** L. narrow linear, recurved, dentate. Sheaths ciliate, denticulate. Cal. 0. **a.** 8, 9. *Still water.* G. *occ.* Fr.

3. **alagnensis.** "L. in whorled bundles, linear, straight, soft, mucronate, denticulate. Sheath of L. with a single tooth on each side. 6, 7. *Ditches.* Alagna in Ticino."—Poll.

4. **flexilis.** L. narrow linear, finely mucronulate, denticulate. Sheaths ciliato-denticulate. **a.** 8, 9. *Lakes in a sandy soil.* Binowschensee near Stettin.

754. CAULINIA.

1. **oceanica.** L. long, linear, entire, ob-

tuse. Stip. intrafoliaceous, very short, truncate. Flowers under water. *Sea or sandy shores.* Mdt.

755. ZOSTERA.

1. **marina.** Monœcious. Anthers sessile. L. 3-nerved. Stalk of Sheath broader upwards. Seeds striate. **p.** 8. *In sandy or muddy creeks.*

2. **nana.** Monœcious. Stalk of Sheath of even breadth. L. 1-nerved, not exceeding length of a finger. Seeds sessile, striate. **p.** 7, 8. *In the sea, on sand.* Isl. of Norderney. Poole. Chichester creek.

3. **nodosa.** "Monœcious. Stem extensively creeping, somewhat 2-edged, not thickened at the joinings, covered by the sandy mud. L. 2–12 in. long, emarginate, nerved; lower quickly perishing. **p.** 7. *Sea and salt pools.* Sic."—Guss.

756. PHUCAGROSTIS.

1. **major.** Stem creeping. L. grass-like. **p.** 7. *Muddy shores.* s. Fr. Sic.

C. LEMNACEÆ.

Frond floating, without distinction of stem or leaf. Flowers from the margin. Anthers 2. Fruit bladdery, not bursting.

757. LEMNA.

1. **trisulca.** Fronds lanceolate, serrate at top, transversely proliferous. Fil. recurved, filiform. **a.** 6 (4, 5, Koch). *Stagnant.*

2. **minor.** Fronds obovate, nearly flat on both sides, proliferous. Root solitary. **a.** 6, 7 (4, 5, Koch). *Stagnant.*

3. **arrhiza.** Fronds elliptic or subrotund, convex beneath, without roots. **a.** *Stagnant.* Fr. Spa. Cors.

4. **polyrrhiza.** Fronds obovate, subrotund. Roots numerous, clustered. Fil. narrowed below. **a.** 4, 5. *Stagnant.*

5. **gibba.** Fronds obovate, convex above, hemispherical beneath. Root solitary. **a.** 6, 7. *Stagnant.*

CI. ORCHIDEÆ.

Filaments and Style united into a common column. Anther 1, composed of 2 separate parts, each of a single cell; or 2 in *Cypripedium*. Sepals 3, usually coloured. Petals 3; one generally of a different form and larger, in some genera with a posterior spur, or bag. Caps. inferior, opening by 3 longitudinal clefts.

758. LIMODORUM.

1. **abortivum.** Leafless. Scales sheathing. Label ovate, undulate. **p.** 5, 6. *Dry thickets.* m. and s. Eur. *Scattered.*

2. **sphærolabium.** "Bulbs fasciculate, filiform. Stem scaly, nearly leafless. Bracts shorter than germen. Sep. and Pet. nearly equal in length, the latter narrower. Label rounded (not ovate or elliptic), somewhat undulate, narrowest at base, channeled. Spur cylindrical, as long as germen. Bonifacio."—Viviani.

759. EPIPOGIUM.

1. **Gmelini.** Leafless. Scales sheathing. Fl. few, drooping. **p.** 7, 8. *Mountain woods, on rotten wood. rare.* G. Sc. Fr.

760. ORCHIS.

A. Label coiled in the bud! Sp. 1.

B. Germen twisted. Glands in a pouch, united. Sp. 2.

C. Germen twisted. Glands in a pouch, or fold of the stigma, not united.

- **i.** Tubers simple.
  - **a.** Label undivided, dentate. Sp. 3–6.
  - **b.** Label 3-lobed: lateral divisions as broad as undivided middle. Sp. 7, 8.

c. Label 3-lobed: middle much largest and divided, *monkey-like.*

* Sepals united at base.

† Legs as long as body. Sp. 9–12.

†† Legs much shorter than body. Sp. 13–18.

** Sepals free. Sp. 19–21.

d. Label 3-lobed: lateral segments broad; middle truncato-emarginate.

* Bracts with a single nerve. Sp. 22–27.

** Bracts many-nerved, not veiny. 28–33.

*** Bracts veiny. Sp. 34, 35.

ii. Tubers palmate. Sp. 36–39.

D. Glands naked; otherwise as **C.**

i. Spur slender.

a. Tubers palmate. Sp. 40, 41.

b. Tubers entire. Sp. 42, 43.

ii. Spur pouch-like. 44–47.

E. Label uppermost, the germen not being twisted. Sp. 48, 49.

Place not known. Sp. 50.

A. *Label coiled in the bud.* HIMANTOGLOSSUM.

✓ 1. **hircina.** Label trifid: middle segment very long, twisted, emarginate. Nectary a short pouch. **p.** 7. *Chalky pastures and thickets.* G. *occ.* Fr. It.

B. *Label not coiled. Germen twisted. Glands at the base of the pollen-masses united in a point.* ANACAMPTIS.

✓ 2. **pyramidalis.** Label of 3 equal, entire lobes. Spur subulato-filiform. Sepals spreading, acuminate. **p.** 7. *Dry pastures.*

C. *Glands separate; otherwise as* **B.**

i. *Tubers simple.*

a. *Label undivided.*

3. **saccata.** "L. somewhat channeled; lower oblongo-lanceolate. Bracts *reddish,* lanceolate, exceeding germen. Two outer Sep. spreading, oblong, obtuse; inner, and the 2 Petals, connivent. Label obovate and elliptic, obtuse and subemarginate, somewhat crenulate. Spur straight, obtuse, widened into a dependent bag, half as long as germen. **p.** 1–3. *Grassy.* Sic."—GUSS. Lucania.

4. **decipiens.** "L. lineari-lanceolate. Sep. erect, oblong, somewhat obtuse, rather shorter than lanceolate petals. Label obovato-flabelliform, rather convex, somewhat emarginate. Spur obtuse, ascending, not as long as germen. Bracts subconvolute at top. **p.** 3, 4. *Hills.* Avolo. Sic."—GUSS.

5. **rubra.** "Lower L. lineari-lanceolate, somewhat channeled. Bracts *flesh-coloured,* lanceolate, rather shorter than germen. Sep. blunt, connivent. Label canaliculato-concave, longer than broad. Spur dependent, about as long as germen. **p.** 3, 4. *Dry calc. hills.* Sic. Cal."—GUSS.

6. **papilionacea.** Label subrotund (broader than long, GUSS.). Pet. and Sep. connivent. (Spur dependent, half as long as germen, GUSS.) Bracts 3–5-nerved. **p.** 4, 5. *Warm pastures.* Adr. G. It.

b. *Label 3-lobed: lateral divisions as broad as the undivided middle.*

7. **coriophora.** Lateral Div. of Label toothed; middle entire. Pet. and Sep. acuminate, connivent. Bracts 1-nerved, as long as germen. **p.** 5, 6. *Moist meadows.* Fr. It. s. and m. G. ✓

8. **fragrans.** "L. lineari-lanceolate, acute. Bracts lineari-lanceolate, acuminate, rather exceeding germen. Sep. ovato-lanceolate, acuminate, united, but separating and divaricate at the tip. Label rather convex, about one-third of length of germen. Lobes nearly equal; the lateral rhombeo-ovate, obliquely truncate, dentato-serrulate; middle longer, lanceolate, entire. Spur saccato-conical, rather descending, nearly straight, somewhat incurved, shorter than germen. **p.** 3, 4. *Open pastures.* Sic." —GUSS. ✓

c. *Label 3-lobed: middle lobe larger and longer, and divided at the end,* monkey-shaped.

* *Sepals united at base.*

† *Legs from point of union as long as body.*

9. **Bivonæ.** Bracts scariose, lineari-lanceolate, half as long as germen. Sep. acute, and, with 2 upper Pet., connivent. Div. of Label very narrow linear. Spur very short (1 *or* 1½ *line*). **p.** 4, 5. *Dry, elevated pastures.* Mte. del Occhio at Pal.—GUSS.

10. **undulatifolia.** Pet. ovato-triangular, acute, about half sepals. Div. of Label similar, lanceolate, acuminate, entire. (*Spur* 3 *or* 4 *lines long,* GUSS.) **p.** 6. *Bushy calc. hills.* Rome. Nap. (*See Plate, fig.* 1.) ✓

11. **Simia.** Pet. linear, acute, nearly equal. The 4 Div. of Label all similar, linear, obtuse. ✓

Legs nearly as wide as body. Spur about half germen. Bracts ovate, acute, very short. **p.** 5. *Calc. hills.* In It. *also on volcanic sand.* (*Plate, fig.* 2.)

12. **macra.** "Sep. very tapering. Label twice as long as spur. Segm. linear, the anterior with only one vein. Bracts short, acuminate."—Lindley. Legs only half as wide as body. **p.** 5. *Calc. hills.* (*Plate, fig.* 3, *from Eng. Bot.*)

†† *Legs from point of union much shorter than body.*

13. **militaris.** Sep. broadly lanceolate. Pet. linear. Body of Label linear or oblong. Lower Lobes very short, toothed. Spur about one-third of length of germen. Bracts ovate, very short. **p.** 5. *Calc. bushy hills.* (*Plate, fig.* 4.)

14. **galeata.** Sep. broadly lanceolate, acute. Pet. linear-oblong. Body of Label enlarging downwards. Arms very narrow, linear, entire. Legs entire, tapering, obtuse. Spur not half as long as germen. Bracts very short, ovate, acute. **p.** 5. *Calc. hills.* (*Plate, fig.* 5.)

15. **ætnensis.** "Lower L. oblongo-lanceolate. Spike short, obconical. Bracts *pink*, lanceolate, acuminate, not exceeding germen. Sep. ovate, acute or acuminate. Arms of Label narrow linear, obliquely truncate; middle obversely cuneate, cloven. Spur subincurved, equalling half the germen. **p.** 4, 5. *Grassy hills.* Castrogiovanni. Ætna."—Guss.

16. **fusca.** Sep. elliptic, rather acute, *dark purple.* Pet. linear. Arms of Label generally toothed. Body cuneate. Legs truncate, crenate. Spur about half germen. Bracts 1-nerved, very short. **p.** 5, 6. *Calc. thickets.* (*Plate, fig.* 6 *and* 7 *: the latter from Eng. Bot.*)

17. **variegata.** Sep. *pale,* elliptic, very acuminate. Pet. narrow lanceolate, finely acute. Arms oblong, ending in two acute teeth. Body cuneate. Legs tapering, rounded at the ends. Spur more than half germen. Bracts 1-nerved, finely acute, exceeding germen. **p.** 5. *Calc. and volcanic pastures.* G. s. Fr. It. (*Plate, fig.* 8.)

18. **tenoreana.** Sep. elliptic, acuminate. Pet. oblong. Upper Div. of Label rounded; lower very short, truncate, somewhat toothed. Bracts subulate, equalling germen. **p.** 3, 4. *Grassy.* Palasca in Cors. Sic. (*Plate, fig.* 9.)

β. Haurii, Jordan. L. acute, and somewhat mucronulate.

** *Sepals free. Legs very short.*

19. **longibracteata.** Sep. oval, obtuse. Pet. oblong. Div. of Label rounded: upper incurved, wavy at top; lower very short. Spur $\frac{1}{3}$ of length of germen. Bracts equalling flowers. **p.** 2. *Shade.* Nice. s. Fr. Sic. Nap. (*Plate, fig.* 10.)

20. **ustulata.** Lateral Sep. semiovate, rather acute. Pet. linear. Div. of Label flat, straight, sometimes crenate at tip. Hood semiglobose. Bracts not as long as germen. L. lanceolate. **p.** 6. *Meadows. in* Eng. *on a calc. soil.* (*Plate, fig.* 11.)

21. **globosa.** Lateral Div. of Label acute; middle ending in 2 or 3 small teeth. Pet. ovato-triangular, acute, about half sepal, which terminates in a club-shaped acumen. **p.** 6. *Mountain pastures.* G. Fr.

d. *Label 3-lobed: lateral divisions broad; middle truncate, emarginate.*

* *Bracts with a single nerve.*

22. **Spitzelii.** Lobes of Label crenate. Spur subcylindrical, descending vertically, about equalling germen. Sep. spreading. Pet. truncato-emarginate. Fl. *purple.* **p.** 6. *Grassy meadows.* Weissbach. Alps in Tyr.—Koch.

23. **provincialis.** Middle Lobe of Label smallest. Spur ascending, exceeding germen. Sep. and Pet. erect, obtuse, with callous tips. Pet. 1-nerved. **p.** 5. *Woody hills.* Prov. Rome. *Fl. yellowish.*

24. **mascula.** Lobes of Label strongly marked, toothed; middle emarginate, with intermediate tooth. Spur rather ascending, cylindrical, about as long as germen. Pet. obtuse, 1-nerved, shorter than sepals. Lateral Sep. reflexed. *In large specimens, one or two of the lower Bracts are sometimes 3-nerved.* **p.** 4, 5. *Woods and meadows. Fl. purple.*

25. **Brancifortii.** "Root-L. oblongo-linear. Stem-L. acute. Spike cylindrical. Bracts *purple,* lanceolate, as long as germen. Sep. spreading. Label about one-fifth of germen, flat, 3-lobed. Lobes linear, entire: the lateral short; middle broader and longer, obtuse. Spur filiform, descending, slightly curved, as long as germen. **p.** 3, 4. *Open hills.* Sic."—Guss.

26. **quadripunctata.** "Pet. spreading, oval, obtuse. Label flat, with 3 equal lobes: the middle lobe somewhat emarginate. Spur straight, filiform, exceeding germen. Fl. small.

Bracts *purple*. **p.** Monte Gargano. Cal."—Ten., *who says that in* O. Brancifortii *the Spur is considerably shorter than the germen. I am not at all sure that these two are rightly placed.*

✓ 27. **pallens.** Lobes of Label slightly marked, nearly entire. Spur rather ascending, cylindrical, about equalling germen. Pet. 3-nerved at base. Lateral Sep. at last reflexed. Bracts equalling germen. *Fl. generally yellowish.* **p.** 4, 5. *Calc. thickets.* s. and m. G. Dau.

** *Bracts with more than one nerve, not veiny.*

✓ 28. **palustris.** Label broad, with 3 deep, nearly equal, obtuse lobes; middle lobe hardly emarginate. Spur shorter than germen. Pet. 1-nerved. Sep. spreading, acute. Bracts exceeding flowers. *Resembles* mascula, *but is larger, and with a more lax spike.* **p.** 6. *Marshy.* Fr. *rare.* It.

29. **longicornu.** "Lower L. oblongo-linear. Spike lax, cylindrical. Bracts *pink*, lanceolate, rather shorter than germen. Sep. elliptic, obtuse, connivent. Label shorter than germen, *dotted on the back.* Lateral Lobes deflexed, broadly ovate, subcrenulate, silky, *dark purple*; middle Lobe very short, emarginate, *whitish.* Spur incurved, ascending, compresso-spatulate at top, about as long as germen. **p.** 3–5. *Open pastures.* Sic."—Guss.

30. **Champagneuxii.** "Bulbs subrotund, generally 3, the 2 younger on long stalks. L. lineari-lanceolate, mucronate. Spike lax, 6–7-flowered. Lips 3-lobed, dotted, plicate in the middle. Lateral lobes *always joined to the lower surface,* denticulate; middle lobe *truncato-emarginate,* sometimes very short. Spur long, ascending, broad at top, *cloven,* truncate, somewhat shorter than ovary. Div. of Perigone obtuse, uniting into a helmet. Bracts acute, shorter than ovary. The lateral Lobes of the Lip never spread out, but always applied one against the other. **p.** 3. Hyères."—Barneaud.

✓ 31. **Morio.** Lobes of Label broad; middle truncato-emarginate. Spur equalling germen, horizontal or descending. Pet. 3-nerved; these and the Sep. connivent. *Nerves of Sep. green.* Upper Bracts 1-nerved. **p.** 5. *Pastures.*

32. **panormitana.** "Lower L. broadly lanceolate, acute. Spike ovoid, lax, few-flowered. Bracts lanceolate, rather shorter than germen. Lateral Sep. spreading, acute, reflexed at top; middle and the 2 Pet. connivent. Label not as long as germen, broadly obcordate, 3-lobed, subcrenulate. Lateral Lobes rounded, at last reflexed, longer than the middle. Spur straight, dependent or horizontal, somewhat bag-like, conical, about half as long as germen. **p.** 3, 4. Pal."—Guss.

✓ 33. **laxiflora.** Middle Lobe broadest, deeply emarginate. Spur cylindrical, rather ascending, shorter than germen. Pet. 3-nerved. Sep. obtuse, *with greenish veins. Resembles* Morio, *but the Spike is much more lax.* **p.** 5, 6. *Peaty meadows.*

*** *Bracts exceeding flowers, nerved and veiny.*

✓ 34. **sambucina.** Label slightly lobed. Spur cylindrical, ascending, as long as germen. Lateral Sep. spreading. Bracts very large. Bulbs sometimes slightly lobed. *Fl. yellowish.* **p.** 5, 6. *Mountain woods.* m. and s. G. c. Fr.

35. **romana.** Label convex. Lobes subovate, crenate; the middle smaller, subemarginate. Spur ascending, exceeding germen. Lateral Sep. bent back. *Fl. purple.* **p.** 4. *Dry hills.* s. It. *In this, as in the preceding species, the Tubers are often slightly lobed at the extremity.*

ii. *Tubers palmate. Bracts 3-nerved and veiny.*

36. **Traunsteineri.** Spur shorter than germen. Lateral Sep. turned upwards. Lower Bracts equalling flowers; upper shorter. Stem hollow. Stem-L. linear, erect, somewhat channeled, flat at the top. **p.** 5, 6. *Peaty meadows.* Tyrol.—Koch.

37. **latifolia.** Spur conico-cylindrical, descending, shorter than germen. Lateral Sep. spreading, afterwards turned upwards. Lower and middle Bracts exceeding flowers. Stem hollow. Lower L. obtuse; upper somewhat acuminate. **p.** 6. *Moist meadows.*—Koch.

✓ 38. **incarnata.** Spur conico-cylindrical, descending, shorter than germen. Lateral Sep. spreading, afterwards turned upwards. All Bracts 3-nerved and veined, exceeding flowers. Stem hollow. L. erect, lanceolate, attenuate, hooded at the tip. **p.** 6. *Boggy meadows.*—Koch.

✓ 39. **maculata.** Spur conico-cylindrical, descending, shorter than germen. Lateral Sep. spreading. Middle Bracts about equalling germen. Stem solid. Upper L. small, bract-like, remote from flowers. **p.** 6. *Woods and meadows.*

D. *Glands at the base of the pollen-masses naked; in other respects as* **C.**

i. *Spur slender.*

a. *Tubers palmate.*

40. **odoratissima.** Glands approximate. Label trifid. Lobes obtuse. Spur filiform, about equalling germen. Sep. spreading. **p.** 6, 7. *Mountain meadows.* Rouen. Maleshcrbes. Alps. Vosges. Rhine.

41. **conopsea.** Glands approximate. Label trifid. Lobes obtuse. Spur filiform, about twice germen. Sepals spreading. **p.** 6, 7. *Calc. hills, and also on boggy ground.*

b. *Tubers entire.*

42. **bifolia.** Glands distant. Label linear, entire. Spur filiform, 2½ times germen. Cells of the Anther parallel. **p.** 6, 7. *Shade.*

43. **chlorantha.** Glands distant. Label linear, entire. Spur somewhat clavate, twice germen. Cells of the Anther widely spreading below. **p.** 6, 7. *Shade.*

ii. *Spur pouch-like.*

44. **cylindracea.** "Stem-L. very short, rather sheathing. Spike cylindrical, very dense. Bracts ovato-lanceolate, acute, shorter than germen. Fl. secund. Sep. and Pet. acute, connate. Label flat, trifid, half as long as germen. Lateral Segm. very narrow, entire; middle twice as wide, obtuse, entire, or with 2 or 3 teeth. Spur saccato-conical, obtuse. **p.** 3, 4. *Grass, among bushes.* Sic."—Guss. Capri. Cal.

45. **parviflora.** Label trifid. Div. linear: the middle one longer and cloven. Spur subglobose. Pet. and Sep. connivent, obtuse. Tubers simple. *Size and habit of* O. albida. **p.** *Mountains.* Pdm.—Willd.

46. **viridis.** Glands distant. Label linear, ending in 3 teeth; the middle one very short. Pouch very short. Sep. connivent, helmet-like. Tubers palmate. **p.** 6, 7. *Moist pastures and chalk hills.*

47. **albida.** Glands approximate. Label tripartite: lateral Div. acute; middle twice as broad, obtuse. Pouch one-third of germen. Sep. connivent. Tubers fasciculate. **p.** 6–8. *Hills. occ.*

E. *Germen not twisted. The Label is left uppermost.*

48. **suaveolens.** Label ovate, with an obtuse tooth on each side. Spur cylindrico-subulate, about equal to germen. Sep. acute. **p.** 7, 8. *Mountains* near Grenoble. On the Dolaz in Sw. and on the Tollstein by Zierl in Tyrol. *Very rare.*

49. **nigra.** Label ovate, acuminate. Pouch one-third of germen. Sepals acuminate. **p.** 5–8. Alps.

The following I do not know where to place.

50. **corsica.** Spike contracted, globose. Pet. and Sep. connivent, ovate, acuminate; the Pet. rather the smallest. Label trifid: lateral Lobes falcate, toothed; middle Lobe expanded and rounded towards the top, toothed. Spur curved, obtuse, twice as long as germen. **p.** Bonifacio.—Viviani.

There are also four species, Cupanii, bonanniana, gervasiana, *and* pseudopallens, *the descriptions of which are taken by Gussone from the plates in the 'Panphyton Siculum' of Cupani; but the plants themselves are at present unknown.*

761. ACERAS.

1. **anthropophora.** Label exceeding germen, tripartite: middle Div. deeply divided, often with an intermediate tooth. Segm. linear. **p.** 6. *Moist calc. meadows; scattered.*

762. OPHRYS.

A. *Lateral Sepals spreading.*

i. *Column without a beak.*

a. *Middle Sepal vaulted, covering the column.*

1. **bombylifera.** Sep. oval, concave, *pale green.* Pet. shorter, ovate, hairy. Label 3-lobed: middle lobe emarginate, reflexed in the notch, and with an advancing appendage. **p.** 4. *Open hills.* It. *occ.* Sic.

2. **lutea.** Lateral Sep. semiovate. Pet. lanceolate, more than half sepals. Label obovate, 3-lobed at the end: the middle lobe emarginate, not much larger than the lateral. **p.** 4, 5. *Rocky.* s. Fr. Nice. Tiv. Cors. Sicily. *rare.*

3. **fusca.** Pet. hairy, not half as long as sepals. Label trifid. Lateral Lobes parabolic; the middle retuse. Stem-L. lanceolate. **p.** 4. *Open pastures.* Castiglione in Tuscany. Sicily.

4. **pallida.** "Lateral Sep. semiovato-elliptic. Pet. linear, nearly as long as sepals. Label obovato-conical, velvety, 3-lobed to the middle, marked with a shining spot. Lateral

Lobes recurvato-deflexed; the middle larger, rounded, nearly entire. Column very short. **p.** 3, 4. *Pastures and woody hills.* Sic."—Guss.

5. **canaliculata.** "Sep. broadly ovate. Pet. similar, but very small, ciliato-hispid. Label with a cuneiform base and a deeply channeled mouth, convex, trifid. Lateral Div. ovate, acuminate, hispid, shorter; middle expanded at the end in two lobes. **p.** Bonifacio."—Viv. *I place this here on account of its declared similarity to* O. ciliata.

b. *Middle Sepal erect.*

✓ 6. **muscifera.** Pet. villous, involuto-filiform, more than half as long as sepals. Label pinnately 4-lobed, marked with a smooth, *blue*, oblong spot. Lobes ovate. **p.** 6. *Calc. thickets. occ.*

7. **Speculum.** Sep. oblong. Pet. narrow linear, acute, arcuato-retroflex, *dark*, half as long as sepals. Label obovate, with a smooth, shining, bluish-brown disc, very villous on the revolute margin, 3-lobed. Lateral Lobes oblong; middle twice as large each way, emarginate. **p.** 3, 4. *Grassy hills.* Sic.

✓ 8. **tenthredinifera.** Pet. triangular, very short. Sep. oval. Label somewhat 4-sided, slightly 2-lobed, with a rounded, intermediate, forward point, above which is a tuft of threads. **p.** 3, 4. *Dry hills.* Rome.

ii. *Column with a small terminal beak.*

9. **oxyrhynchus.** "Sep. ovali-lanceolate, obtuse, spreading, *pale pink*. Pet. triangular, villous, very short. Margin revolute. Label nearly square, silky, obsoletely 3-lobed; with a conical hunch on each side of the base; emarginate, with an appendage, but without any beard above it. Appendage incurved, ending in 3 or 5 teeth. Beak of Column acute. **p.** 3, 4. *Open hills.* Sic.—Guss.

✓ 10. **arachnites.** Pet. ovate, about one-third of sepals. Label nearly entire, *variegated*, truncate, with a smooth, intermediate, forward process, generally 3-toothed. Column with a small point. **p.** 5, 6. *Calc. thickets. occ.*

11. **apifera.** Pet. oblong, about half *pink* sepals. Label 4-lobed, *variegated*, with a smooth, intermediate, recurved tooth. **p.** 6. *Calc. hills.*

✓ 12. **aranifera.** Label entire or slightly 4-lobed, sometimes with a very small forward tooth, marked with a smooth spot, *like the Greek* Π. Pet. oblong, rounded at the end, (more than half sepals, E. B. Sm. and Koch describe them as smooth; I find them sometimes villous.) **p.** 4, 5. *Calc. hills. occ. dry hills,* It.

β. *exaltata,* Guss. Sep. pink.

γ. *atrata,* Rchb. Lines of Label blue, with a white margin.

13. **lunulata.** "Sep. lanceolate, obtuse, pink. Pet. linear, smooth, somewhat acute, nearly as long as sepals. Label slightly lengthened, obcordate, velvety, with a shining crescent-shaped spot, entire or 3-lobed, with a denticulate margin and a small appendage. Lateral Lobes nearly vertical, more villous, with a conical hunch. Beak acuminate. **p.** 3, 4. *Hill pastures.* Sic."—Guss.

14. **crabronifera.** "Label rounded, convex, villous, retuse, with a lanceolate, forward point; marked with a transverse, reniform spot. Pet. lanceolate, wavy, more than half as long as the rose-coloured sepals. **p.** 4, 5. Marino near Rome."—Mauri.

15. **Pseudo-speculum.** Label nearly circular, *sometimes with a small tooth on each side*, slightly emarginate (*sometimes with an intermediate tooth,* Koch). Disc smooth: border hairy. Pet. oblong, on a rounded base, smooth. **p.** 5. *Grassy hills.* Mtp. Metz. *rare.*

16. **Bertolonii.** Label obovate, slightly lobed at the end, with intermediate, smooth, straight, rounded tooth; marked with a nearly square, smooth spot. Pet. linear, on a rounded base. **p.** 4, 5. *Warm open hills.* Istria. Rome. mdt. Fr. Sic.

B. *Sepals and Petals connivent, forming a helmet.*

17. **alpina.** Label ovato-oblong, with a small tooth on each side. L. narrow linear, as long as scape. **p.** 7, 8. *Very high pastures.* Alps. ✓

The following I do not know where to place.

18. **funerea.** "Label gradually contracted at base, conical, the sides bent down, divided at top into 3 rounded lobes: the middle rather the largest, nearly entire. s. Corsica and at Genoa by the Aqueduct."—Viviani.

763. SERAPIAS.

1. **oxyglottis.** Callus at the base of the Label simple. Terminal Div. ovato-lanceolate, acuminate, almost smooth, about equalling petals. Bracts about as long as flowers. Second Tuber stalked. **p.** 5. *Dry fields and woods.* It.

2. **parviflora.** Callus double. Terminal Div. of Label lineari-lanceolate, acute, about as long as petals, not adpressed to germen. Bracts acuminate, rather shorter than flowers. **p.** 3, 4. *Open hills on coast.* Sic.

✓ 3. **Lingua.** Callus double. Terminal Div. of Label ovato-lanceolate, acuminate, bearded, 3 or 4 times as long as petals, adpressed to germen. Bracts exceeding flowers. **p.** 5. *Dry hills.* Mte. Testaccio and about Rome.

✓ 4. **cordigera.** Callus double. Terminal Div. cordate, acuminate, bearded. Bracts shorter than flowers. **p.** 5. *Sandy.* Trieste. mdt. Fr. It.

5. **triloba.** Callus double. Terminal Div. of Label 3-lobed, denticulate, obtuse, with a small apiculus. **p.** 5. *Meadows.* Gen. Trieste. *Very rare.*

764. GOODYERA.

✓ 1. **repens.** L. ovate. Spike spiral. Point of Nectary elongate, deflexed. **p.** 7. *Mossy woods.* Sc. Germ. *rare. Woody hills.* Fr.

765. SPIRANTHES.

✓ 1. **spiralis.** Tubers ovato-oblong. Root-L. ovate, spreading. Stem sheathed with bract-like L. Fl. in a single spiral row. Label obcordate. Lateral Sep. quite separate. **p.** 8, 9. *Hill pastures.*

2. **æstivalis.** Tubers subcylindrical. Root-L. lanceolate, erect. Stem leafy. Fl. in a single spiral row. Label ovate. Lateral Sep. quite separate. **p.** 7. *Moist meadows, rare.*

3. **cernua.** Root of 2 long, cylindrical tubers. L. lanceolate, erect. Fl. in 3 spiral rows. Sep. and Pet. united. Label oblong, contracted in the middle. **p.** 8, 9. Bearhaven, co. Cork.

766. NEOTTIA.

1. **Nidus-Avis.** Leafless. Stem clothed with sheathing scales. Label with two spreading lobes. Root a multitude of cylindrical fleshy fibres. **p.** 5, 6. *Parasitic on roots in woods.*

767. HERMINIUM.

1. **Monorchis.** Middle lobe of Label longest. Pet. with a lobe on each side. Root-L. 2, lanceolate. **p.** 5, 6. *Calc. pastures. Scattered.* ✓

768. LISTERA.

1. **ovata.** L. 2, oval, opposite. Label of 2 linear, parallel lobes. Column crested. **p.** 5, 6. *Woods and pastures.* ✓

2. **cordata.** L. 2, cordate, opposite. Label of 4 lobes. Column without a crest. **p.** 7. *Moors and shady mountains.* Br. Alps. Vosges. Pyr. ✓

769. EPIPACTIS.

A. *Germen twisted. Sepals subconnivent.*

1. **grandiflora.** Label obtuse, shorter than calyx, with elevated lines on the disc. (Sep. obtuse, Koch.) Bracts longer than the smooth germen. L. elliptic. Root creeping. **p.** 6. *Woods. Scattered.* ✓

2. **ensifolia.** Label very obtuse, half as long as calyx, with elevated lines on the disc. (Sep. acute, Koch.) Bracts very much shorter than germen. L. lanceolate. Roots clustered. **p.** 5, 6. *Woods. Rare.* ✓

3. **comosa.** "Label cordate, entire, about as long as calyx. Bracts linear, ciliolate, about 6 times as long as flowers. L. ovate and lanceolate, reflexed. **p.** 6, 7. *Shady hills.* Bosco del Feudo di Chiusa, Sic."—Guss.

4. **Maravigni.** "Label ovate, acute, sometimes 3-lobed, shorter than the spreading, linear, acuminate sepals. Bracts lanceolate; lower about equalling germen. L. lanceolate; upper long linear, far exceeding the dense, many-flowered spike. **p.** 5, 6. *Shady hills.* Ætna. Alla Cerita above Catania."—Guss.

5. **rubra.** Label acuminate, about equalling calyx, with waving lines on the disc. (Sep. acuminate, Koch.) Bracts longer than the downy germen. **p.** 6, 7. *Warm calc. hills. Scattered.* ✓

B. *Germen not twisted. Sepals spreading.*

6. **latifolia.** Label roundish cordate, entire, obtuse, with a small recurved point; shorter ✓?

than sepals. Keel not crenate above, E. B. (Hunches of the Base smooth, Koch.) Lower Bracts longer than flowers. L. broad ovate. **p.** 7, 8. *Woody hills.*—Bab.

7. **media.** Label triangulari-cordate, entire, acute, as long as lanceolate sepals and petals. "Keel crenate above." Lower Bracts longer than flowers. **p.** 8. *Woods.* Eng. *occasionally.*

β. *purpurata.* Label shorter than petals. *Woods.*—Bab.: *adopted from Fries, who says it is* rubiginosa *of Koch; but this seems to me to agree better with the* ovalis *of Bab.*

8. **ovalis.** Label transversely oval, acute, as long as ovate, acute petals and sepals: its Keel plicato-crenate above. One or two lower Bracts longer than flowers, but shorter than fruit: all much shorter than upper L. **p.** 7. *Rocky woods.* Settle, Yorksh.—Bab. *I have adopted Babington's descriptions, not being at all sure of the plants. By the Label, or, as he terms it, the terminal division of the Lip, being as long as the sepals, we must understand that it extends as far; for the part, considered in itself, is always much shorter. By the Keel, I imagine, the two calli, or hunches, at the base of the Label, are intended.*

9. **microphylla.** Label acuminate, recurved at the points. Hunches at the base with curled folds. L. ovato-lanceolate; upper narrower, shorter than the interval. Margin rough, hairless. **p.** 6, 7. *Woods.* Hartz. —Koch.

10. **palustris.** Label rounded, obtuse, crenate, exceeding petals, with a notched protuberance on the disc. L. lanceolate. Bracts shorter than flowers. **p.** 6, 7. *Wet meadows. Scattered.*

770. CORALLORHIZA.

1. **innata.** Spur of the Nect. short. Label sometimes 3-lobed, joined at the base to the lateral sepals, with 2 callous lines. L. none. Root fleshy, repeatedly branched. **p.** 5, 6. *Boggy woods.* Sc. Alps. Jura.

771. LIPARIS.

1. **Loeselii.** L. 2, elliptico-lanceolate. Scape 3-edged. Label obovate, channeled, undivided, longer than calyx. **p.** 7, 8. *Bogs.* Norf. Rhine. Alps. Flanders. Norm. Malesherbes, &c.

772. MALAXIS.

1. **paludosa.** Stalk 5-edged. L. 3 or 4, spatulate, rough at the top. Label concave, acute, half calyx. **p.** 7, 8. *Bogs.* Br. n. G. *Not in France.*

2. **monophylla.** L. single, ovate, acute. Scape 3-edged. Label conical, acuminate. **p.** 7. *Moist meadows. rare.* Alps. Riesengeb.

773. CYPRIPEDIUM.

1. **Calceolus.** Stem leafy, terminal. Lobe of Column nearly oval, smooth (ovate, Koch). Label somewhat laterally compressed, shorter than calyx. **p.** 6. *Woods.* n. Eng. s. and m. G. Fr. *rare.*

CII. CANNACEÆ.

Corolla superior, of 1 petal. Anther 1, simple, linear. *In the only European species the anther is on the margin of a petal-like filament, and the pistil is also petal-like.*

774. CANNA.

1. **indica.** Inner border of Cor. trifid. Div. lanceolate, acuminate. L. ovato-oblong, acute at each end. **p.** 7–9. *Naturalized on a stream between* Syracuse and Agosta. —Guss.

CIII. IRIDEÆ.

Perianth superior, 6-parted. Segments generally unequal, but all petal-like. Stamens 3, on the base of the external segments. Anthers bursting outwards. Style one. Stigmas dilated. Capsule with 3 cells. Dissepiments attached to the valves. Seeds numerous.

775. CROCUS.

A. *Flowering in the Spring. L. nearly at the same time.*

1. **vernus.** Sheath of 1 L. Throat of Cor. hairy, purplish. Stigma divided into 3 cuneate, jagged lobes. **p.** 3. *Mountains.* Alps. Pyr. Cev. Apenn. Albano. Nap.

2. **suaveolens.** Sheath of 1 L. Throat of Cor. hairless, yellow. Stigma of 3 jagged lobes. L. linear. **p.** 2, 3. *Meadows.* Rome. Terracina.

3. **minimus.** Sheath of 1 L., often cloven. Throat of Cor. hairless, white. Stigma trifid: segments laciniate. L. filiform. **p.** *Winter or spring.* Cors. Sard.

4. **Imperati.** Sheath of 2 L. Throat of Cor. hairless, yellow. Stigma trifid: segments laciniate. Fibres of coating of Bulb nearly parallel. **p.** 2, 3. *Rocky hills.* Fondi, Castellamare. *Gay unites these three species under the name of* minimus. *The covering of the bulb seems the same in all.*

5. **versicolor.** Sheath of 2 L.; the outer larger, obtuse. Throat of Cor. hairless, yellow. Stigma trifid; the segments nearly entire. Fibres of coating of Bulb nearly parallel. L. linear, filiform. **p.** 2, 3. Nice.

6. **variegatus.** Sheath of 2 L. Throat of Cor. hairless, yellow. Stigma deeply trifid: segments laciniate. Covering of Root net-like. L. linear, filiform. **p.** 2, 3. *Grassy.* Trieste. Monfalcone. Meriano. [illegible]

7. **biflorus.** Sheath of 2 L., acuminate. Throat hairless, yellow. Stigma deeply trifid: segments somewhat laciniate. Covering of Bulb not splitting into fibres. Scales cut round at base. L. lineari-filiform. **p.** 1–3. *Grassy.* It.

B. *Flowering in Autumn.*

i. *L. with the flowers.*

8. **Thomasii.** Sheath of 2 L. Throat of Cor. villous, purplish. Stigma tripartite: segments straight, nearly entire. Tunic of Bulb of interwoven fibres. L. lineari-filiform, ciliate. **p.** 10. Calabria.

9. **longiflorus.** Sheath of 1 L., acute. Throat nearly smooth, yellow. Stigma tripartite: segments laciniate at top. Covering of Bulb of interwoven fibres. L. linear. **p.** 9, 10. *Meadows.* Sic.

ii. *L. after flowers.*

10. **sativus.** Sheath of 1 L. Throat of Cor. bearded, purplish. Stigma tripartite: segments linear, notched at the end, as long as flowers. Covering of Bulb finely fibrous, lengthened beyond bulb. L. linear. **p.** 9. *Woody hills.* Ascoli.

11. **nudiflorus.** Sheath of 1 L. Throat hairless, purplish. Stigma repeatedly divided. Covering of Bulb somewhat membranous, or splitting into parallel fibres. Root sometimes throwing out runners. 10. *Meadows.* Nottingham. Pyr. Corb.

12. **medius.** Sheath of 1 L., acuminate. Stigma trifid, included: segments finely multipartite. L. broadly linear. Covering of Bulb net-like. **p.** 9, 10. *Hills.* Liguria.—Bert.

776. ROMULEA.

1. **Bulbocodium.** L. subulate, compressed, channeled, furrowed, recurved, twisted. Interior Sheath with a broad, membranous margin. Stamens shorter than pistil. **p.** 3. *Grassy.* s. Fr. Istria. s. It. *Tube of Cor. orange; border violet. Seeds yellowish.*

β. *Linaresii.* Cor. all purple. Stamens exceeding pistil.

2. **purpurascens** *of Ten.* Scape 3-edged, 1-flowered. L. subulate, compressed, channeled, furrowed, straight. Sheath with a narrow margin. Stamens exceeding pistil. *Outer Pet. green, externally with brown stripes. Seeds black.* **p.** 4. Reggio. Sic.—Bert.

3. **ramiflora** *of Ten.* "Scape branched, many-flowered. L. subulate, compressed, furrowed. Sheath with a narrow margin. Stamens exceeding pistil. **p.** 4. *Pastures.* Apulia. Santa Maria del Piano at Naples. Rome."—Bert.

4. **Columnæ.** Scape somewhat branched. L. subulato-filiform, compressed, furrowed,

twisted or recurved. Upper Sheath with a broad margin. Stamens exceeding pistil. **p.** 3. *Grassy.* Jersey. n. w. Fr. It.

777. GLADIOLUS.

A. *Reticulate covering of Root with rounded openings.*

1. **triphyllus.** Fl. about 3, in 1 row. Anthers much shorter than filaments. **p.** 5, 6. Geneva. *Mountains* of Carr.—Bert.

2. **palustris.** Fl. 3 or 4, secund. Tube twice as long as seed-vessel. Claw of middle Div. curved, remote. Lobes of Stigma papilloso-ciliate almost from base. Anthers shorter than filaments. Auricles at base obtuse, parallel. Caps. oblongo-obovate, rounded at top, marked with 6 equal furrows. **p.** 5, 6. *Meadows.* e. G.—Koch.

B. *Reticulate covering of Root with long, narrow openings.*

3. **communis.** Fl. secund. Fil. half as long again as anthers. Auricles at base obtuse, parallel. Tube half as long again as germen. Lobes of Stigma gradually broader upwards, papilloso-ciliate almost from base. Caps. 3-edged, obovate, impressed at top. Seeds broadly winged. **p.** 5, 6. *Meadows.* Stettin and Frankf.-on-Oder.—Koch.

4. **illyricus.** Fl. secund. Fil. 1½ anthers. Auricles at base acuminate. Tube three times as long as germen. Div. of Stigma linear from the base to the middle, and with a smooth margin; suddenly enlarged at top with a papilloso-ciliate margin. Caps. obovate, 3-edged. **p.** 5. *Meadows.* Carn. Trieste. Fiume.—Koch.

5. **imbricatus.** Fl. secund, approximate. Fil. 1½ anthers. Auricles at base parallel. Tube nearly three times as long as germen. Div. of Stigma gradually broader upwards, papilloso-ciliate almost from base. Caps. with 3 rounded angles. **p.** 5, 6. *Grassy shade, meadows.* G. Boh. Sil. *Dry calc. hills.* Nap.

6. **segetum** (*communis* of Bert.). Fl. about 10, in 2 rows. Upper Div. of Cor. divaricate. Lower Segm. nearly equal, lanceolate. Anthers longer than filaments. Caps. with 3 furrows. **p.** 4, 5. *Corn.* Istria. Veglia. Locarno. s. Fr. Sic. Nap.

7. **infestus.** "Spike lax. Fl. 4–14, obliquely alternate. Div. of Cor. alternately pink and purple: uppermost very broad, covering the 2 lateral ones; 3 lower unequal. Anthers about as long as filaments. Seeds globose, prolonged downwards. L. ensiform. **p.** 4, 5. *Fields.* Avola in Sic."—Guss.

8. **byzantinus.** Fl. numerous, in 2 rows. Upper Segm. of Cor. covered by the lateral ones. Lower Div. lanceolate, the middle largest. Anthers longer than filaments. Seeds winged. L. long, ensiform, linear. **p.** 3, 4. *Corn.* Sic. Abr.

778. IRIS.

A. Outer Petals bearded. L. ensiform.
  i. Stem decidedly exceeding L. Sp. 1–6.
  ii. L. as long as, or longer than, stem.
    a. Stem many-flowered. Sp. 7–10.
    b. Stem 1-, rarely 2-flowered. Sp. 11–13.
B. Outer Petals not bearded.
  i. L. ensiform. Germen 3-edged. Sp. 14–16.
  ii. L. linear, channeled. Sp. 17–22.
  iii. L. 4-edged. Sp. 23.

A. *Outer Petals bearded. L. ensiform.*

i. *Stem decidedly exceeding L.*

1. **pallida.** Stem many-flowered. Sheaths altogether scariose. Tube of Cor. about as long as germen. Segm. erect, obovate, all entire. *Fl. large, pale blue, with green cross-lines.* **p.** 4, 5. *Grassy hills.* Istria. Pisa. *Walls.* Pavia.

2. **florentina.** Stem with about 2 sessile, erect flowers. Sheaths and Bracts with a narrow, scariose margin. Segm. of Cor. erect, oblong, obtuse, reflexed, entire. Tube about about as long as germen. *Fl. white or very pale blue, reticulate with greenish-yellow veins.* **p.** 4, 5. *Walls, &c.* e. Prov. Between Genoa and Pegli. Terrac. Sic. Carn.

3. **germanica.** Stem branched. Lower Fl. stalked, erect. Sheaths leaf-like at the base, with a long scariose upper part. Tube of Cor. twice or three times as long as germen. Lobes of Stigma divaricate. Segm. erect, subrotund. *Fl. a full blue.* **p.** 4, 5. *Stony, or on walls.* Fr. G. It. *occ.*

4. **squalens.** Stem many-flowered. Sheaths leaf-like at base; upper part scariose. Tube of Cor. 2 or 3 times as long as germen. Segm. oval. Lobes of Stigma porrect, but separate. *Outer Pet. pale purple; inner a dirty yellow. Smells like honey.* **p.** 6. *Stony slopes.* Heidelberg. Oppenheim. Bolzano in Tyrol. *According to Bert., the bracts have only a narrow,*

scariose margin, and the smell is very disagreeable.

5. **sambucina.** Stem many-flowered, exceeding L. Sheaths leaf-like at base; upper part scariose. Tube of Cor. two or three times as long as germen. Segm. of Cor. obovate: *outer purplish,* deflexed; inner notched, *of a dull blue.* Lobes of Stigma touching. **p.** 5, 6. *Hills.* G. *rare, though widely scattered.*

6. **biflora.** "Scape about 3-flowered, exceeding L. Germen terete, marked with 3 stripes. *Pet. violet: beard white. Flowers twice in the year.* **p.** Monte Gargano."—Tenore.

ii. *L. as long as, or longer than stem, especially when in fruit.*

a. *Stem many-flowered.*

7. **bohemica.** L. as long as 2–4-flowered stem when in flower; twice as long when in fruit. Sheaths leaf-like, but thin, ovato-oblong. Tube of Cor. 2 or 3 times germen. Outer Segm. obovate, *violet*; inner oval, *with deeper pencilled veins,* suddenly contracted into claw. Ovary subterete, with 6, nearly equal furrows. **p.** 5. *Sunny borders.* e. G. *rare.*

8. **Fieberi.** L. as long as stem when in flower; twice as long when in fruit. Sheaths leaf-like, thin, lanceolate, acuminate. Ovary obtusely 3-edged: sides furrowed. Fl. as in Sp. 7. **p.** 5. *Rocks and shady meadows.* Boh. Sil.—Koch.

9. **hungarica.** L. equalling flowers, twice as long as fruit. Sheaths leaf-like, thin, ovate, almost entirely violet. Ovary obtusely 3-edged: sides furrowed. Fl. as in the two preceding. **p.** 5. *Hills.* Millerschau in Boh.—Koch.

10. **variegata.** Stem about as long as falcato-ensiform L. Sheaths leaf-like. Segm. of Cor. oblongo-obovate; inner gradually attenuate. Ovary obtusely 3-edged. Fl. *yellow, with dark veins.* **p.** 5, 6. *Grassy and woody hills.* Aust.

b. *Stem 1-flowered, rarely 2-flowered.*

11. **lutescens.** Stem fully as long as L. Tube of Cor. included in the scariose sheath. Segm. oblongo-obovate, *yellowish, with violet veins.* **p.** 5. *Calc. rocks.* Rous. Hyères. Sitten. Sion, Sw. s. Fr. Carn.

12. **Chamæiris.** "Dwarf. Stem 1-flowered, and, including the flower, exceeding L. Sheaths inflated, acute, shorter than tube of corolla. Fl. yellow, *much smaller than in Sp.* 13. **p.** 4, 5. *Sea-shore.* Ardenza near Leghorn."—Bert.

13. **pumila.** Stem 1-flowered, shorter than L. Tube of Cor. exceeding sheath. Segm. nearly equal, oblongo-obovate. *Fl. purplish, pale blue or white.* **p.** 4, 5. *Dry hills and walls.* s. Fr. Aust. Lig. Sic.

B. *Flowers not bearded.*

i. *L. ensiform. Germen 3-edged.*

14. **Pseudacorus.** Stem terete, many-flowered. Inner Segm. of Cor. narrower and shorter than stigma. *Fl. yellow.* Seeds angular. **p.** 6, 7. *Water.*

15. **fœtidissima.** Stem compressed, many-flowered. Inner Segm. of Cor. larger than stigma. Germen 3-edged, with a furrow on the edge. *Fl. dingy purple.* Seeds globose, *red.* **p.** 6, 7. *Shade.* Eng. Fr. s. Tyr. It. *Not in G. or Sw.*

16. **xyphioides.** L. subensiform, lineari-subulate, channeled. Sheaths leaf-like. Germen with 2 edges. Stem 2-flowered. Outer Segm. of Cor. broad obovate; inner larger than stigma. *Fl. blue.* **p.** *High.* Pyr.

ii. *L. linear, channeled.*

17. **sibirica.** Root not bulbous. Stem terete, about 3-flowered, hollow, exceeding acuminate L. Sheaths scariose. Outer Pet. obovate, attenuate into short claw. Germen 3-edged. *Fl. bluish, with purple veins.* **p.** 5. *Meadows or shade.* Als. Dau. n. Sw. Fiume. G. *rare.* Aosta. Pavia.

18. **spuria.** Root not bulbous. Stem terete, few-flowered, exceeding lanceolato-linear L. Sheaths green. Outer Segm. of Cor. subrotund, shorter than lanceolate claw, *yellowish, with blue veins.* Germen 6-edged. Caps. with a long beak. **p.** 6. *Moist meadows.* Elne. Narbonne. Mentz.

19. **graminea.** Stem 2-edged, about 2-flowered, shorter than linear L. Sheaths green. Blade of outer Segm. of Cor. ovate, much shorter than the broad claw. Germen 6-edged. *Claw purple, with a yellow line. Blade whitish, with violet lines.* **p.** 5, 6. *Grass.* Rochelle. Narb. Carcassonne. Vosges. Sil. s. G. Lig. Bologna.

20. **scorpioides.** Root bulbous. Stem very short, 1–3-flowered. First L. short; later lanceolato-linear, acuminate, channeled and keeled. Tube of Cor. very long and slen-

der: 3 of the segments small, reflexed; others large, erect. Stigmas large. *Fl. pale violet or white.* **p.** 11–3. *Rocks and barren hills.* Pal. Sardinia.

21. **juncea.** Root bulbous: covering at last scariose. Stem exceeding most of the L., about 2-flowered. Tube of Cor. long and slender: *larger segments reflexed; smaller erect, lanceolate, obtuse, yellow.* **p.** 4. Genoa.

22. **Sisyrinchium.** Root bulbous: covering a net-work. L. exceeding 3–5-flowered stem. Sheaths scariose. Tube of Cor. very long. **p.** 4, 5. Genoa. Cal. Cors. Sard. Sic.

iii. *L. 4-edged.*

23. **tuberosa.** Root tuberous, fibrous. Stem 1-flowered. *Blade of outer Segm. of Cor. dark, velvety, purple.* **p.** 2–5. s. Fr. It.

CIV. AMARYLLIDEÆ.

Perianth sessile, 6-parted. Segments all petal-like. Stamens 6. Anthers bursting inwards. Style 1. Capsule 3-celled. Dissepiments attached to the valves. Seeds numerous.

779. STERNBERGIA.

1. **colchiciflora.** Scape very short. Tube of Cor. slender: outer segments mucronulate. L. narrow linear, occurring after the *yellow* flowers. **p.** 9, 10. Monte Priore, Picenum. Piano di Cinque Miglia, Abr.

2. **lutea.** Scape 3 or 4 inches long. Tube of Cor. thick, and very short: segments pointless. L. linear, appearing with the *yellow* flowers. **p.** 9, 10. *Olive-grounds and meadows.* Montp. Rovigno, It. *occ.*

780. PANCRATIUM.

1. **maritimum.** L. linear, loosely twisted. Sheath many-flowered. Tube of Cor. long: segments lanceolato-linear. *Fl. white.* **p.** 6–8. *Shores.* s. Fr. Lig. Terrac. Ischia. Sard.

2. **illyricum.** L. broad lingulate. Sheath many-flowered. Tube of Cor. short: segments lanceolate. (Nectary not staminiferous, Pers.) **p.** 5. *Shores.* Cors. Sard. Civ. Vecchia.

781. NARCISSUS.

A. L. flat, linear, obtuse. Tube of Corolla short, obversely conical. Crown campanulate, dentate. Sp. 1–3.

B. L. flat, linear, obtuse. Corolla hypocrateriform.
- **i.** Scape nearly cylindrical. Sp. 4–6.
- **ii.** Scape 2-edged. Crown cup-shaped.
  - **a.** Crown yellow. Sp. 7–12.
  - **b.** Crown white, as well as Petals. Sp. 13–15.

C. L. convoluto-setaceous. Sp. 16, 17.

D. L. semicylindrical and channeled at base. Sp. 18–23.

A. *L. flat, linear, obtuse. Scape 1-flowered. Tube of Corolla short, obconical. Crown campanulate, dentate.*

1. **Pseudo-narcissus.** Scape 2-edged, striate. Fl. nearly sessile in sheath. Crown erect, nearly as long as segments of corolla. Stamens equal. **p.** 3, 4. *Woods and meadows.* ✓

2. **minor.** Scape 2-edged, without stripes. Fl. on a long stalk within the sheath. Crown 6-lobed, fully as long as segments of corolla. **p.** 3, 4. *Woods and heaths.* Dax.
Rasel mountain, Mentone! Moggr.

3. **incomparabilis.** Scape slightly 2-edged. Fl. nearly sessile in sheath. Tube almost cylindrical. Crown erect, half as long as segments of corolla. Stamens equal. **p.** 4. *Meadows.* mdt. Fr. It. ✓

B. *L. nearly flat. Fl. hypocrateriform.*

i. *Scape nearly terete.*

4. **calathinus.** Scape terete, 2–4-flowered. Crown campanulate, nearly entire, as long as lanceolate, somewhat reflexed segments of corolla. Tube short. **p.** 4. Isle of Glenans, Britt.

5. **dubius.** Scape obtusely compressed, 2–6-flowered. Crown denticulate, half as long as oval, obtuse segments. Fl. all white. **p.** 4, 5. mdt. Fr. ✓

6. **chrysanthus.** Scape compressed, 3–10-flowered (8–15, Lois.). Crown orange, about one-third of lanceolato-ovate, apiculate, yellow segments. **p.** 3. Grasse.

ii. *Scape 2-edged.*

a. *Crown yellow.*

7. **poeticus.** Scape 1-flowered, striate. Crown of Fl. very short, saucer-shaped, with a red, crenulate margin. Segm. of Perianth ovate, white. Germen 2-edged. **p.** 4, 5. *Grassy.* Fr. Austrian shore. Vallais. Pays de Vaud. Italy.

8. **radiiflorus.** Scape 1-flowered, striate. Crown erect, cup-shaped, with a red, crenulate margin. Germen round. **p.** 4, 5. *Hills.* adr. Aust. Styr. Vall.

9. **biflorus.** Scape striate, 1–3-flowered. Crown of Fl. not one-third petals, *yellow,* with crenulate margin. Segm. broad ovate, *pale yellowish.* **p.** 5. *Meadows.* Fr. Vall. Italy.

10. **patulus.** Scape 2–6-flowered. Crown of Fl. very short, golden, with 6 broad, nearly entire lobes, hardly half as long as elliptico-ovate, *very pale* segments. **p.** 1–3. *Hills.* Calarita. Isl. of Hyères.

11. **præcox.** Scape 6–12-flowered. Crown golden, 6-cleft, about one-sixth of oblongo-lanceolate segments. Segm. lemon-coloured, as long as tube. **p.** 3. Sienna. Nap.

Cupularis

12. **Tazetta.** Scape 2–12-flowered. Crown of Fl. golden, quite entire. Mouth contracted, half as long as ovate, very pale segments. **p.** 3, 4. *Meadows in clayey soil.* s. Fr. Osero. Italy.

β. orientalis. Margin of Crown crenate. *This seems to be the* N. italicus *of Guss.*

b. *Crown and petals white.*

13. **polyanthus.** Scape slightly 2-edged, 8–20-flowered. Crown of Fl. rather yellow at first, afterwards white, not crenulate, about one-third as long as ovate, alternately wider, segments. **p.** 3. *Stony.* Toulon. Nice.

14. **niveus.** Scape 6–10-flowered. Crown of Fl. white, undivided, repando-crenulate, about one-fourth as long as ovato-oblong, white, mucronulate segments. Germen nearly globular. **p.** 3, 4. *Cult.* Toul. Grasse. Torano near Sarzana. *Duby joins to this* N. subalbidus *of Lois., which has a yellow and somewhat* 6-*lobed crown, and appears nearer to* Tazetta.

15. **unicolor.** Scape 10–15-flowered. Stalks very unequal. Crown of Fl. *quite white,* undivided, subrepand, equal to one-sixth of oblong, acute segments. **p.** 1, 2. Base of Vesuvius. Capri.

C. *L. convoluto-setaceous.*

16. **serotinus.** "Scape 1-flowered. Crown pitcher-shaped, crenate, somewhat sexpartite, greenish-yellow. Div. of Cor. white, lineari-lanceolate, the alternate ones apiculate, (7, 8, Bert.) times as long as crown. L. appearing after the flowers. **p.** 9, 10. *Open hills.* Pal. Pantellaria."—Guss.

17. **cupanianus.** Scape slender, cylindrical, 1–7-flowered. L. after flowers. Crown golden, entire or crenulate, undivided, about half as long as lanceolate, mucronate, *very white* segments. **p.** 9, 10. *Coasts.* Cors. Sard. Calab. Sic.

D. *L.* (*at the base at least*) *semicylindrical and channeled.*

18. **lætus.** L. flat at the top. Scape 1–3-flowered. Crown of Cor. somewhat 6-cleft, repand, waved, half as long as lanceolate, obtuse segments. **p.** 2, 3. Grasse.

19. **ochroleucus.** Scape nearly round, smooth, 4–8-flowered. Crown of Cor. pale yellow, quite entire, half as long as the subrotundo-ovate, unequally broad, nearly white segments. **p.** 4. *Fields.* Toulon?

20. **odorus.** Scape nearly round, 1–5-flowered. Crown campanulate, 6-lobed. Lobes entire, half as long as oblong, acute segments. Fl. golden. **p.** 3, 4. *Fields and olive-grounds.* Lucca. *Meadows.* w. and s. Fr. Lucca.

21. **intermedius.** Scape nearly round, 1–3-flowered. Crown of Cor. very open, waved, almost entire, equalling one-fourth of broadly ovate segments. *Fl. yellow.* **p.** 3, 4. *Hills.* Bayonne. *Seems hardly distinct from* N. Jonquilla.

22. **Jonquilla.** Scape round, 2–6-flowered. Crown of Cor. undivided, very open, slightly crenulate, equalling one-third of ovate, mucronulate segments. *Fl. golden. Tube greenish-yellow.* L. subulate. **p.** 3, 4. *Stony.* Lang. Prov. Pozzuolo in Lucca.

N. trilobus, *said by Persoon to resemble* N. Jonquilla, *and to be found in s. Eur., is not mentioned by more recent authors.*

23. **Bulbocodium.** Scape smooth, cylindrical, 1-flowered. Crown top-shaped, entire, equalling lineari-lanceolate, acute segments. L. semicylindrical, very narrow. *Fl. yellow.* **p.** 5, 6. *Heaths.* Bayonne. Dax. Agen.

782. LEUCOJUM.

A. *Style filiform.*

1. **hyemale.** Sheath of 2 valves, with 2 flowers. Segm. of Cor. lanceolate, acuminate, slightly exceeding stamens. L. narrow linear, flat. *Fl. white.* **p.** 2. *Rocks.* Villa Franca near Nice.

2. **roseum.** Sheath of 2 valves, with 1 flower. Segm. of Cor. oblong, with a short, blunt acumen. Style twice as long as stamens. L. filiform. *Fl. pink.* **p.** 2. Corsica.

3. **autumnale.** Sheath of 1 valve with 2 flowers. Segm. of Cor. oval; the inner ending in 3 teeth. L. filiform. **p.** 9–11. *Rocks on coast.* Mtp.? Nice. Cors. Sard. Sic.

B. *Style club-shaped.*

4. **vernum.** Sheath of 1 valve, with 1 very open, campanulate flower. *Pet. tipped with green.* **p.** 2, 3. *Moist meadows and shade.* Fr. G. n. It.

5. **æstivum.** Sheath of 1 oblong valve, many-flowered. **p.** 4, 5. *Marshes.* s. Eng. s. Fr. s. and s. e. G. Lomb.

783. GALANTHUS.

1. **nivalis.** Bulb ovoid. L. narrow linear. Outer Segm. of Fl. oblongo-lanceolate, twice as long as inner. *Inner with green tips.* **p.** 2, 3. *Shady hills.* Fr. G. n. and m. It.

2. **Imperati.** Bulb globose. L. broad linear, flat. Outer Segm. of Cor. ovato-oblong, one-third longer than inner. **p.** 4, 5. K. Nap.

784. AGAVE.

1. **americana.** L. fleshy, with spinescent teeth. Scape much branched. **p.** 6. *Warm rocky. Escapes. Occ.*

CV. ASPARAGEÆ.

Perianth petal-like, 6-cleft, or of 6 L. (in *Paris* and *Maianthemum* the divisions are only 4). Stamens as many as divisions of Perianth. Anthers bursting inwards. Fruit succulent, of 3 cells (2 in *Maianthemum*, 4 in *Paris*). Seeds fixed to the central angle. L. with anastomosing veins.

FL. COMPLETE. GERMEN SUPERIOR.

785. ASPARAGUS.

A. *Herbaceous, erect.*

1. **tenuifolius.** Branches numerous, leafy. L. fasciculate, setaceous, flexile, quite smooth. Fl.-stalks axillary, with joining near the top. **p.** 5, 6. *Woods and mountain meadows.* Cev. Avig. Grasse? Istria. Shore of Carn. n. and m. Italy.

2. **officinalis.** Branches and L. quite smooth. L. filiform, in small fascicles. Fl.-stalks nodding, with joining in the middle or a little above. **p.** 5. *Sandy coasts,* s. and s. w. Fr. *Moist rocky,* Cornw. *Fertile meadows,* G. *Shade,* n. It. Sic.

3. **scaber.** L. and stripes of Stem denticulato-scabrous. L. filiform. Fl.-stalks recurved; joining above the middle. **p.** 5. *Sandy shores.* Mtp. Aigues Mortes. Shores of Adriatic.

B. *Shrubby.*

4. **albus.** Stem flexuose, with divaricate thorns. L. fasciculate, 3-edged, obtuse, filiform. Fl.-stalk with joining near the base. **s.S.** *Shores.* Venice. Sic. Sard. Cors.

5. **acutifolius.** Unarmed. Branches numerous, hairy. L. many in a bundle, needle-shaped, rigid, cuspidate. Fl.-stalks with joining in the middle. All Segm. of Cor. recurved. **w.** 8, 9. *Dry bushy.* mdt. Fr. Trieste. Italy.

6. **aphyllus.** Unarmed. Branches numerous, hairy. L. few in a bundle, needle-shaped. Fl.-stalks with joining in the middle. Three Segm. of Cor. reflexed. **w.** 9, 10. *Woody coasts.* Sic.—Bert.

7. **horridus.** Leafless. Stem smooth. Prickles angular, leaf-like, thick, alternate, somewhat spreading. **w.** 4, 5. *Sandy hills.* Val di Noto.

786. STREPTOPUS.

1. **amplexifolius.** Smooth. L. amplexicaul. Fl.-stalks solitary, geniculate. **p.** 6, 7.

Mountain woods. Alps. Sil. Vosges. Pyr. Auv. Calabria.

787. PARIS.

1. **quadrifolia.** L. 4–7. Cal. and Cor. spreading. **p.** 5, 6. *Woods.* Eng. Fr. G. Italy. *occ.*

788. CONVALLARIA.

A. *Corolla cylindrical. Stem leafy.*

1. **verticillata.** Stem erect, angular. L. lineari-lanceolate, in whorls. **p.** 5, 6. *Woody hills.* Sc. Fr. G. It.

2. **Polygonatum.** Stem erect, angular. L. alternate, elliptical, subamplexicaul, smooth. Stalks axillary, smooth, 1–3-flowered. Stamens smooth. **p.** 5, 6. *Woods.* Eng. *occ.* Fr. G. Italy.

3. **latifolia.** Stem erect, angular. L. alternate, ovate, acuminate, somewhat stalked, hairy on veins beneath. Stalks axillary, pubescent, 1–4-flowered. Stamens smooth. **p.** 5, 6. *Woody hills.* Aust. Styr.—Koch. *Seems to be a var. of Sp.* 2.

4. **multiflora.** Stem round. L. amplexicaul, alternate, ovato-oblong or elliptic, smooth. Stalks axillary, 3–5-flowered, smooth. Fil. hairy. **p.** 5, 6. *Moist woods.* Eng. *occ.* Fr. G. It.

β. bracteata. Rac. somewhat leafy.

B. *Corolla campanulate. Scape naked.*

5. **majalis.** Rac. terminal, one-sided. Fl. cernuous. **p.** 5. *Shade.*

789. MAIANTHEMUM.

1. **bifolium.** Stem with 2 alternate cordate L. **p.** 5, 6. *Woods.* Fr. G. n. It.

FL. DIŒCIOUS. GERMEN SUPERIOR.

790. RUSCUS.

1. **aculeatus.** L. rigid, acuminate, mucronate, bearing 1–2 flowers on the upper surface. Bracts minute, scariose. **s.S.** 3, 4. *Thickets.* Eng. Fr. s. G. It.

2. **Hypoglossum.** L. oblongo-lanceolate, acuminate, pointless, bearing several flowers on the upper surface. Bract leaf-like, lanceolate, acute. **s.S.** 3, 4. *Thickets.* Nicc. Carn. Monte Baldo. Rome. Nap.

3. **Hypophyllum.** L. ovate, acute, bearing the flowers beneath. **s.S.** Venetian islands. *Woods* near Fiume.—Poll.

791. SMILAX.

1. **aspera.** L. subhastato-cordate, ovate or lanceolate, coriaceous, aculeato-dentate. **w.** 8. *Dry thickets.* Mdt.

2. **nigra.** L. cordato-oblong, coriaceous, unarmed, 7-nerved. Stem with few or no prickles. Berries black. **w.** Monte Maggiore, Istria.—Poll.

3. **mauritanica.** L. cordate, nervose, coriaceous, unarmed. L.-stalks with Tendrils at the base. Fl. in racemes.—Lois. *Berries red.* **w.** 5, 6. Isl. of Hyères. Cors. Nap.

FL. DIŒCIOUS. GERMEN INFERIOR.

792. TAMUS.

1. **communis.** L. cordate, acuminate, undivided. **p.** 4. *Hedges and thickets.*

CVI. LILIACEÆ.

Perianth inferior, petal-like, in 6 divisions. Stamens 6. Anthers bursting inwards. Ovary of 3 cells and many seeds affixed to the central angle. Fruit dry. Dissepiment attached to the valves.

SEEDS FLAT. STIGMAS 3. *NECTARY* 0. *STYLE* 0.

793. TULIPA.

A. *Bulb woolly.*

1. **gesneriana.** L. lanceolate, wavy. Stem 1-flowered, smooth. Fl. erect. Pet. obovate, obtuse, smooth. Fil. smooth. **p.** *Mountains about* Nicc. *Not noticed by Bertoloni.*

2. **præcox.** "Stem at last exceeding upper L. Outer Pet. acuminate: basal spot broad, ovato-oblong. **p.** 3, 4. Prov. It."—

Bert. "Outer Pet. somewhat obtuse (*in fig.*); inner one-fourth shorter. Fl. broad at base, hardly or not at all expanding at top."—Jordan.

3. **Oculus-Solis.** "Stem always falling short of upper L. Outer Pet. acuminate; inner acute: all with a long and narrow basal spot. **p.** 4, 5. *Cult.* mdt. Fr. Sitten in the Vallais. It."—Bert.

4. **maleolens.** "Smooth. L. narrow lanceolate; the uppermost exceeding the flower-stalk. Outer Pet. ovato-lanceolate, acuminate, narrowed at base; inner obversely oblong, obtuse. Spot occupying whole base, cuneate, (*anticè*) emarginate, eroso-lacerate; that of the outer Pet. broadest. **p.** 4, 5. *Olive-grounds.* Lucca. San Miniato near Florence."—Bert.

5. **apula.** "Wool of the Bulb yellow. Lower L. oblongo-lanceolate; upper lineari-lanceolate, exceeding stem. A rhombeo-ovate spot at the base of petals. Anthers very long. **p.** 4. Apulia."—Bert.

6. **clusiana.** Smooth. L. lanceolato-linear; the uppermost shorter than stem. Outer Pet. larger, oblongo-lanceolate, acute, *somewhat pink along the back, white within*; inner obtuse, *coloured.* Basal Spot short, rhombic. **p.** 4, 5. *Vineyards and olive-grounds.* Nice. s. Fr. Sarzana. Flor.

B. *Bulb without wool.*

7. **celsiana.** Stem smooth. L. lineari-lanceolate, acuminate, channeled. Fl. erect. Pet. oblongo-lanceolate, acute, smooth at tip. Stamens hirsute at base. **p.** 5, 6. *Meadows.* Mtp. Narb.

8. **Didieri.** Stem smooth. L. lanceolato-oblong, falling short of flowers. Fl. rounded at base and somewhat contracted above. Pet. elliptic, acute; the outer recurved at top. Fil. quite hairless. *Pet. of the colour of those of* T. Oculus-Solis, *with a bluish-grey spot at the base bordered with yellow.* **p.** 5. *Fields.* Clappey near St. Jean de Maurienne in Savoy.

9. **sylvestris.** Stem smooth. L. broadly lineari-lanceolate (or linear, Bert.), acuminate. Fl. rather nodding. Pet. broad lanceolate, acute, bearded at top. Stamens hirsute at base. **p.** 5, 6. *Meadows and cult.* Fr. m. and s. G. Italy.

10. **serotina.** "Smooth. L. lanceolate; uppermost falling short of stem. Outer Pet. ovato-oblong, acuminate, narrow at base; inner obversely oblong, mucronulate, all bearded at the tip. Basal Spot short. Fil. subulato-filiform, hairless. *Fl. blood-colour.* **p.** 5, 6. Villa Antenoreana, Flor."—Bert.

11. **spatulata.** "Smooth. L. ovato-oblong or lanceolate; uppermost falling short of stem. Outer Pet. elliptic, ovate, acute; inner broadly obovato-spatulate, very blunt. Basal Spot cuneate, short. *Fl. crimson.* **p.** 5. Villa Antenoreana, Flor."—Bert.

12. **scabriscapa.** "Glaucous. Stem pubescent. Lower L. oblongo-lanceolate; upper narrow. Pet. elliptico-ovate, acute, somewhat recurved at tip; inner with a hollow on each side of an apiculus. Basal Spot short, rhombic, erose at top, acute. **p.** 4, 5. *Cult.* Bologna and Flor."—Bert.

794. FRITILLARIA.

1. **montana.** L. linear, acute; lowest opposite or in threes. Floral L. 2, opposite, distant from the others. Fl. usually solitary. Pet. tesselate, obtuse, straight, bearded at tip. Nect. subovate. **p.** 5, 6. *Grassy hills on coast.* Adriatic.

2. **pyrenaica.** "L. linear, channeled; lowest opposite. Stem 1–3-flowered. Pet. hardly tesselate, incurved. **p.** 3. Pyr. Dau. Prov."—Duby.

3. **Meleagris.** L. linear, recurved, alternate, spaced equally; floral L. sometimes opposite. Stem 1-flowered. Pet. tesselate, incurved. Nect. linear. **p.** 4, 5. *Moist pastures.* Eng. w. Fr. Sw. *rare.* G. *scattered.* Nice. Col di Tende.

4. **messanensis.** L. linear, alternate. Floral L. usually 3 together. Pet. cuneate; the outer narrow, obversely oblong. *Dull purple, with a yellowish back,* not tesselate. Nect. linear. **p.** 4, 5. *Hills on coast.* Reggio. Messina.—Bert.

795. LILIUM.

A. *Flowers campanulate.*

1. **candidum.** L. lanceolate, undulate, scattered. Fl. stalked, terminal, nodding, smooth within, *white.* **p.** 5, 6. Jura? Ostia. Pontine marshes. Cors. Sic.

2. **bulbiferum.** L. scattered, lineari-lanceolate, flat. Fl. erect, rough within, *orange.* **p.** 6, 7. *Moist woody hills.* Als. Dau. Prov. G. *occ.* It. "*In colder situations the plant produces bulbs in the axil of the L.*"—Bert.

B. *Petals revolute. Flowers cernuous.*

3. **pomponium.** L. scattered, lineari-subulate; the lowest lanceolate, obtuse. Fl. papillose within. Segm. lineari-lanceolate, acute, *orange-red.* **p.** 5, 6. Dau. Provence. Liguria.

4. **pyrenaicum.** "L. scattered, lineari-lanceolate. Fl. few, somewhat umbellate (with dark dots within). Segm. lineari-lanceolate, obtuse, *yellow.* **p.** 6. Pyr. (Mt. Laurenti. Larhune.)"—Duby.

5. **carniolicum.** L. scattered: all lanceolate, ciliate on margin and on nerves beneath. Fl. few, racemose, with raised lines and warts within. Segm. lanceolate, subobtuse, *scarlet.* **p.** 5, 6. Carn. and the Austrian coast. Monte Sommano in the Vicentine.

6. **Martagon.** Intermediate L. in whorls, oblongo-lanceolate, acuminate, rough on margin. Fl. *a winy red.* **p.** 7. *Mountain woods.* Fr. G. n. It.

Aloe vulgaris

SEEDS ROUNDED OR ANGULAR.

796. ERYTHRONIUM.

1. **Dens-Canis.** L. (oblongo-elliptic, Koch) (broadly lanceolate, Duby). Pet. acute; the inner somewhat auricled. **p.** 4, 5. *Woody hills.* Dau. Nice. Mtp. Bayonne. w. Sw. *very rare.* Carn. Sty. n. It.

797. LLOYDIA.

1. **serotina.** Bulb oblong. Root-L. subulate, semiterete. Stem-L. lineari-lanceolate. Fl. usually solitary. **p.** 6–8. *High.*

798. ASPHODELUS.

A. *Upper Stamens erect. Stem naked.*

1. **albus.** L. linear, acutely keeled. Rac. crowded, simple, or with 1 or 2 branches at base. Caps. nearly as long as petals, *about ½ in. long.* **p.** 5. s. France. Carn. n. and m. Italy.

2. **ramosus.** L. linear, acutely keeled. Stem much branched in its whole length. Caps. one-third of petals, *about ¼ in. long.* **p.** 4, 5. *Dry.* mdt. Fr. Fiume. It. s. of Apenn. Cors. Sard.

3. **fistulosus.** L. hollow, semiterete. Scape branched. Fl. solitary, remote. **p.** 3, 4. *Dry coasts.* s. Fr. It. s. of Apenn.

B. *All the Stamens bent down. Stem leafy.*

4. **liburnicus.** Stem densely leafy at base, naked at top. L. filiform, 3-edged, with denticulate stripes. Fl. in lax racemes. Bracts very small. **p.** 6. *Bushy meadows.* Istria. K. Naples.

5. **luteus.** Stem leafy to the raceme. L. filiform, 3-edged, spreading. Rac. crowded. Bracts nearly as long as flowers. **p.** 5. Fiume. Rome. Apenn. Monte Circello. Cal. Sic.

799. ANTHERICUM.

1. **ramosum.** Root of thick, bundled fibres. L. linear, channeled, shorter than the branched scape. Fl. remote. Style straight. **p.** 6, 7. *Stony hills.* Fr. G. n. It.

2. **Liliago.** Root of thick, bundled fibres. L. linear, channeled, shorter than the nearly simple scape. Lower Bracts with a filiform tip. Style bent down. **p.** 5, 6. *Thickets.* Fr. n. and m. G. It.

3. **fugax.** Bulb ovate. Root-L. lineari-filiform, channeled. Scape naked. Rac. simple, lax. **p.** 7, 8. *Dry hills.* s. Sard.—Bert.

800. SIMETHIS.

1. **planifolia** (*Phalangium bicolor*). Root of several cylindrical tubers. L. linear. Rac. compound. Fil. thickened above the middle. **p.** 5. *Sandy.* near Poole. w. Fr. Cannes. Hyères. Cors. Sard.

801. PARADISIA.

1. **Liliastrum.** L. flat. Scape simple. **p.** 7, 8. *High pastures.* Pyr. Alps. Lucca.

802. SCILLA.

A. *Flowers without L.*

i. *Bracts at base of flower-stalks.*

1. **maritima.** Bulb *very large,* coated. L. elliptico-oblong. Rac. long, conical, many-flowered. Bracts spurred, refracted. *Fl. pinky.* **p.** 8–10. *Sandy shores.* s. Fr. It.

2. **undulata.** L. lanceolato-linear, undulate. Rac. lax. Bracts lineari-subulate, much shorter than stalk. Pet. lineari-spatulate. *Fl. stellate, purple.* **p.** 8, 9. *Pastures.* Bonif. Sard.

ii. *No Bracts.*

3. **obtusifolia.** L. lingulate, short. Rac. lax. Caps. subrotund, 3-edged, obtuse. *Fl. smooth, stellate, violet.* **p.** 10, 11. *Pastures.* Sard.

✓ 4. **autumnalis.** L. narrow linear, channeled. Rac. at first corymbose. Fl. small, stellate, *blue.* Pet. elliptico-lanceolate, obtuse. Caps. top-shaped, apiculate. **p.** 8–10. *Vineyards and gravelly pastures. occ.*

B. *Flowers and L. appearing at the same time.*

i. *Flower-stalks without bracts.*

5. **intermedia.** L. 4 or 5, broad linear, flat, somewhat recurved. Scape with rough stripes at the base. Rac. lax, cylindrical. *Cor. small.* Caps. top-shaped, emarginate. **p.** 9, 10. *Hills.* Palermo.

✓ 6. **bifolia.** L. about 2, lanceolate, recurved, sheathing the scape. Rac. lax, nodding when in fruit. **p.** 3–5. *Shady pastures.* Fr. Bav. s. and e. G. It.

ii. *Bracts at base of the flower-stalks.*

7. **verna.** Bulb simple. Scape round. L. erect, linear, hooded. Corymb simple. Bracts single, lanceolate, as long as flower-stalk. Caps. with 3 edges and 3 furrows, apiculate. **p.** 3, 4. *Sandy fields.* Eng. *rare.* w. Fr.

8. **italica.** Bulb simple. L. 2–5, narrow linear, obtuse. Rac. conical. Bracts in pairs, one of which is as long as flower-stalk. *Pet. pale blue.* Caps. rounded, 3-edged. **p.** 4, 5. Lig. Berne. Ober Baden.

9. **amœna.** Bulb simple or with a few small bulbs at base. Scape half round, with acute angles, and bearing a few remote flowers. Bracts small, *sometimes in pairs,* truncate. Caps. top-shaped, subemarginate. **p.** 3, 4. *Sandy.* Marencin in the Landes. Euganean Hills.

✓ 10. **Lilio-Hyacinthus.** "Bulb scaly. L. broad lanceolate, acute, pressed to ground, shorter than scape. Rac. few-flowered. Bracts linear, nearly equalling or exceeding flower-stalk, single. Pet. linear, obtuse. **p.** *Sands.* Dax."—Duby.

11. **hyacinthoides.** Bulb proliferous. L. broadly linear, long, keeled, acute. Rac. long, lax, cylindrical. Stalks somewhat whorled, much longer than open, campanulate flowers. Bracts very small, truncate. Pet. lanceolate, obtuse. **p.** 4, 5. *Dry.* Grasse. Nice.

12. **peruviana.** L. oblong or lanceolate, *sometimes ciliate.* Thyrsus dense, at last corymbose. Bracts lanceolate. Caps. rostrate. **p.** 4, 5. Genoa. Ins. Sacra. Sic. *The name arises from some mistake: the plant has not been found in S. America.* Gussone divides this into three species:—

1. *peruviana.* Primary L. lanceolate, acuminate. Rac. compact, conical. *Not found in Sic.* ✓?
2. *sicula.* Primary L. broadly linear, rather acute. Corymb large, many-flowered, convex.
3. *Ughii.* Primary L. ovate. Corymb large, concave.

13. **Cupani.** "L. lanceolate, shortly and densely ciliate. Corymb few-flowered. Bracts acuminate. Pet. at last connivent. Caps. rostrate. **p.** 4, 5. Val di Mazzara."—Bert.

803. HYACINTHUS.

1. **patulus.** L. broadly linear, narrowed at each end. Rac. lax. Bracts in pairs. Cor. nodding. Tips of Pet. recurved. **p.** 3, 4. s. Fr.? Bassano. Ascoli. Lucca. Rome. *Usually put with* Scilla; *but all botanists seem agreed that the petals are united at the base.*

2. **romanus.** L. exceeding scape. Bracts bag-like. Cor. campanulate. Fil. lanceolate. Caps. 3-edged, obtuse. **p.** 5. *Pastures.* s. Fr. m. and s. It.

3. **dubius.** L. exceeding scape. Rac. cylindrical. Bracts single, not forming a bag. Cor. campanulate. Fil. subulate, broad, and connate at base. Caps. deeply emarginate. **p.** 3, 4. *Meadows.* Palermo.

4. **serotinus.** "L. linear, channeled, shorter than scape. Rac. one-wayed. Bracts ovate, acuminate, exceeding flower-stalk. Cor. campanulate, divided below the middle. Outer Segm. oblong, spreading; inner connate."—Duby. **p.** 6–8. *Stony.* mdt. Fr. *occ.* Pyr. near Valletria. Mtp.

5. **amethystinus.** "L. linear, narrow. Rac. lax. Bracts linear, membranous, solitary, somewhat exceeding flower-stalk. Cor. campanulate, cylindrical at base. Lobes ovate, obtuse. **p.** (5). Central Pyrenees."—Duby.

6. **nonscriptus.** L. broadly linear. Fl. nodding at first, nearly cylindrical in lower part. Bracts 2, unequal. Pet. obtuse, revo-

lute at the tip. **p.** 5. *Woods.* Br. m. and w. Fr. Belg. *Not in G. or It.*

7. **orientalis.** Young L. straight. Bracts very short, single, sometimes cloven. Fl. racemose, funnel-shaped, swelling at base, longer than stalk. Segm. lanceolato-linear. **p.** 3, 4. Prov. Dax. Sarzana. Lucca. Bologna.

8. **fastigiatus.** L. narrow linear. Corymb few-flowered, erect. Bracts solitary, long lanceolate. Tube of Cor. short, somewhat swelling at base. Segm. oblong, spreading. **p.** 3, 4. Cors. Sard. *Has been supposed a var. of* Scilla verna.

9. **trifoliatus.** "L. lanceolate or lineari-lanceolate, ciliate. Rac. lax. Cor. campanulate, angular, as long as cernuous stalk. Caps. subrotundo-elliptic, 3-edged, truncate at each end. **p.** *Fields.* Apul."—Ten.

10. **ciliatus.** L. lanceolate, subobtuse, densely ciliate. Panicle simple, lax. Fl.-stalks very long, spreading, one-flowered. Cor. cylindrical, *cloven for one-third of length.* Caps. turbinato-oblong, 3-edged. **p.** 5. Apulia. —Bert.

804. MUSCARI.

1. **comosum.** L. broadly linear. Fl. prismatic; the upper abortive on long stalks. **p.** 5, 6. *Cult.* Fr. G. It.

2. **maritimum.** "L. narrow linear, canaliculato-convolute. Rac. cylindrical. Fl. urceolate, *yellow,* much longer than stalks; terminal abortive, sessile. **p.** 4, 5. Terranuova, Sic."—Bert.

3. **botryoides.** L. broad linear, erect, as long as scape. Rac. lax. Fl. globose; (upper abortive, sessile, Koch.) **p.** 3, 4. *Cult.* s. Fr. Liége. Rhine, &c. n. It.

4. **racemosum.** L. narrow linear, flaccid, recurved, exceeding scape. Rac. dense when in flower. Fl. tiled downwards, ovate (*teeth paler,* Bert.); upper abortive, sessile. **p.** 4, 5. *Cult.* s. and m. Europe.

5. **commutatum.** "L. narrow linear, channeled, glaucous above, striped. Rac. of Fl. lax, tiled downwards. Cor. dark blue, ovato-oblong: teeth of the same colour. **p.** 3, 4. *Coasts.* It. Sic."—Bert.

6. **parviflorum.** L. terete, somewhat channeled. Rac. lax. Cor. nearly ovate, angular. Bracts 2, 1 a little below the flower-stalk. **p.** 9, 10. Pal. Catania. Syrac.

805. GAGEA.

A. *Root horizontal, covered with cylindrical ascending bulbs, or napuli.*

1. **Granatelli.** Corymb about 4-flowered. Stalks and outer base of Fl. rather woolly. **p.** 3, 4. Foot of Monte Pellegrino, Sic.

B. *Root with 2, accessory, naked, leafless bulbs.*

2. **stenopetala.** Root-L. solitary, linear, attenuate at both ends, flat, sharply keeled. Floral L. 2, opposite. *Bulbs of the year clavate.* Fl.-stalks simple, smooth. **p.** 4, 5. *Fields and dry pastures.*

β. *pratensis.* Outer floral L. sheath-like. Bulbs of year ovate.

3. **Liottardi.** Root-L. 1 or 2, fistulose, semiterete, channeled at base. Floral L. opposite. Stalks simple, villous. Pet. elliptico-lanceolate, obtuse. Bulb nearly round. **p.** 5, 6. *Mountain pastures.* Sw. Tyr. Salzb. Carinthia.

4. **spathacea.** Root-L. 2, erect, filiform, semiterete, hardly channeled. Floral L. solitary, remote from the 2–5-flowered umbel. Stalks simple, smooth. Pet. oblongo-lanceolate, obtuse. Bulb ovoid. **p.** 4, 5. *Moist shade.* n. G.

C. *Accessory Bulb* 1, *included in the common tunic.*

5. **arvensis.** Root-L. 2, linear, channeled, obtusely keeled, recurved. Stem-L. 0. Floral L. 2, opposite. Fl.-stalks branched, villous. Pet. lanceolate. Bulb nearly globose. **p.** 3, 4. *Cultivated.*

6. **saxatilis.** Root-L. 2, filiform, channeled. Stem-L. alternate, lanceolate, acuminate. Fl. terminal, generally solitary. Pet. oblongo-lanceolate, obtuse. Germen oblongo-ovoid, with slightly convex faces. Bulb nearly globose. **p.** 3. *Moist rocky.* Palat. Thur. Hartz. Sic.

7. **bohemica.** L. 2, filiform, channeled. Stem-L. lanceolate, acuminate, alternate. Fl. terminal, generally solitary. Pet. spatulato-oblong. Germen obcordate, with concave faces. Bulb nearly globose. **p.** 3, 4. *Moist rocky.* Boh. Mor. Sil.

8. **minima.** Root-L. solitary, erect, linear, flat, or slightly channeled. Floral-L. solitary. Umbel 2–5-flowered. Rays smooth. Pet. lineari-lanceolate, acuminate. Bulb ovoid. **p.** 4, 5. *Woods, thickets, and pastures.* Alps.

D. *No accessory bulb.*

✓ 9. **lutea.** Root-L. solitary, erect, lineari-lanceolate, abruptly acuminate, flat, acutely keeled. Floral L. 2, nearly opposite. Umbel simple. Stalks smooth. Pet. oblong, obtuse. Bulb ovoid. **p.** 4, 5. *Thickets and shady meadows.* G.

✓ 10. **pusilla.** Root-L. solitary, gradually tapering to a point, channeled. Floral L. 2, nearly opposite, smooth. Pet. lanceolate, obtuse. Bulb ovoid. **p.** 3, 4. *Stony woods.* Boh. Vienna.

11. **nebrodensis.** "Bulb included in somewhat flexuose, ascending fibres. Root-L. 1 or 2, filiform, hairless. Floral L. alternate, 1–2 *lines broad.* Scape 2–4-flowered. Stalks alternate, densely villous. Pet. narrow lineari-oblong, obtuse, somewhat villous at base. **p.** 4, 5. *High open hills.* Madonie."—Guss.

12. **chrysantha.** Smooth. Root-L. 2, lineari-filiform. Floral L. lineari-lanceolate, subciliate, somewhat sheathing. Corymb 1–3-flowered, exceeding L. Pet. obovato-oblong, obtuse, *yellow.* (Bulb nidulant, Guss.) **p.** 4, 5. *Open hills.* Sic.

13. **busambrensis.** "Bulb very small, included in a few ascending fibres. Root-L. about 5, lineari-filiform, ciliate. Scape naked, 1-flowered, villous. Pet. hairless, linear, somewhat acute. **p.** 3. *Stony pastures* below the Obelisk at Busambra."—Guss.

806. ORNITHOGALUM.

A. *Flowers in a corymb, white. Filaments lanceolate, simple.* (*Outer Filaments dilated at base,* Duby.)

1. **arabicum.** L. linear, channeled. Corymb spreading. Bracts cordate, acuminate. Outer Pet. with 3 teeth! (Alternate Fil. subemarginate, Linn.) (Bulb with a few offsets, Parl.) **p.** 6. Prades. Rous. Nice. Bonifacio. Sicily.

2. **refractum.** Bulb with offsets. L. linear, channeled, with a white middle line. Bracts ovato-oblong, shortly acute, hardly exceeding flower-stalks. Lower Fruit-stalks bent downwards. **p.** 4, 5. *Fields and vineyards.* Trieste. Sic. *Smaller than* O. exscapum.

✓ 3. **umbellatum.** Bulbs with offsets. L. linear, channeled, with a white middle line. Margin naked. Fl.-stalks spreading nearly at right angles. Fl. turned upwards, exceeding lanceolato-linear bracts. (Alternate Fil. emarginate, Linn.) Caps. oblong. **p.** 4, 5. *Fields and meadows.* Fr. G. Sw. It. *L. sometimes almost filiform.*

4. **exscapum.** (Bulb not proliferous, Parl.) Scape very short. Fl.-stalks spreading nearly at right angles. L. linear, channeled, preceding scape, very long, with a pale middle line. Bracts ovato-lanceolate, acuminate. Caps. ovoid. **p.** 4. Flor. s. It. Sard.

5. **montanum.** "Bulb simple. L. lanceolate, acuminate, very narrow, hairless, with a narrow, white, membranous margin. Corymb straight. Stamens not exceeding half the petals. Bracts lanceolate, acuminate, shorter than flower-stalk. Caps. turbinate. **p.** 4, 5. Val di Mazzara. Sic. *Caps. much smaller than in* O. umbellatum."—Bert.

6. **collinum.** (Bulb not proliferous, Parl.) L. linear, channeled, sometimes ciliate. Bracts lanceolato-linear, acuminate, equalling stalk. Fl.-stalks spreading at about half a right angle; lower always longer. **p.** 5. *Rocky hills.* Vienna. Trieste. Apenn. Sic.

7. **tenuifolium.** "Bulb not proliferous. L. filiform, with a furrow, without a white line. Fl. few; stalks erecto-patent, exceeding the lanceolate, acuminate bracts. Pet. oblongo-lanceolate: outer obtuse, with a mucro; inner subacute. **p.** 4, 5. *Open.* Sic."—Parl.

8. **comosum.** L. linear, ciliate. Rac. oblong. Fl.-stalks spreading at about half a right angle, at last all equal. Pet. oblong, obtuse; the outer truncate, with an apiculus. **p.** 5, 6. *Grassy thickets.* Fiume.

B. *Flowers in a long, many-flowered raceme. Filaments simple.*

9. **sulphureum.** L. broadly linear, channeled, fugacious. Stalk of Fl. spreading; of Fr. adpressed. Bracts ovato-lanceolate, gradually acuminate. Ovary ovoid. **p.** 5, 6. *Grassy.* Carn. Sw.

10. **pyrenaicum.** L. linear, channeled, withering early. Rac. subobtuse. Stalks of Fl. spreading; of Fr. adpressed. Bracts ovato-lanceolate, gradually acuminate. Pet. oblongo-linear, *greenish-white.* (Ovary oval, equally rounded at each end, Koch.) **p.** 6, 7. *Hill pastures.* Fr. s. G. It. ✓

11. **narbonense.** L. linear, channeled, persistent. Rac. acute. Stalks of Fl. spreading; of Fr. adpressed. Bracts ovato-lanceolate, gradually acuminate. Pet. oblongo-lan- ✓

ceolate, *white, with a green stripe on the back.* Ovary oval. **p.** 6. s. Fr. It.

12. **arcuatum.** "L. linear, channeled. Stalks of Fl. spreading horizontally; of Fr. ascending. Bracts ovato-lanceolate, gradually acuminate. Style shorter than stamens, reaching to middle of ovary. **p.** 6. *Grassy orchards.* Steyer in Aust."—Koch.

13. **stachyoides.** L. linear, channeled. Rac. long. Stalks of Fl. spreading; of Fr. adpressed. Bracts ovate, abruptly contracted into a long acumen. Style somewhat exceeding stamens. **p.** 5, 6. *Fields.* Trieste. Istr.

C. *Flowers in racemes. All Stamens with 3 teeth.*

14. **nutans.** L. linear, channeled. Fl. secund, nodding, in a lax raceme. Stalks longer than germen. Ovary ovoid, deeply umbilicate. **p.** 3. *Meadows and fields. occ.* Fr. G. It.

15. **chloranthum.** Fl. secund, approximate, horizontal. Stalks half as long as germen. Ovary oblong, obtuse, not umbilicate. **p.** 4, 5. *Grassy.* Steyer in Aust.

807. ALLIUM.

A. Alternate Stamens with 2 lateral teeth, exceeding the staminiferous one.
- **i.** L. solid or fistulose. Sp. 1–3.
- **ii.** L. membranous. Sp. 4–11.

B. Lateral Teeth of alternate Stamens shorter than middle. Sp. 12–15.

C. Stamens all simple.
- **i.** Bulbs on a horizontal rhizoma. Sp. 16–18.
- **ii.** Bulbs separate. No creeping Rhizoma.
  - **a.** L. membranous.
    - * Scape included in sheath. Sp. 19.
    - ** Scape exsert.
      - † Scape 2-edged. Sp. 20.
      - †† Scape semicylindrical or 3-edged, one edge being very obtuse. Sp. 21, 22.
      - ††† Scape acutely 3-edged. Sp. 23, 24.
      - †††† Scape terete.
        - ‡ Spathe of one valve. Sp. 25–33.
        - ‡‡ Spathe of 2 valves. Sp. 34–36.
  - **b.** L. somewhat thickened at base, and channeled, flat at top. Sp. 37, 38.
  - **c.** L. semiterete, or convex beneath, and channeled.
    - * Not fistulose. Sp. 39–46.
    - ** Fistulose. Sp. 47–50.

No Allium has, strictly speaking, a leafy stem; but in some species the long sheathing bases of the L. give it that appearance.—Koch.

A. *Alternate Stamens ending in 3 cusps, of which the middle supports the anther; lateral long, filiform.*

i. *L. more or less terete.*

1. **sphærocephalum.** Bulb ovate, simple, soboliferous. Bulbels on long stalks. Scape terete, leafy at base. L. semiterete. ✓ Umbel globose, without bulbs. Pet. oblong; the outer subacute. Anther-bearing Cusp half as long as filaments. Anthers exsert. Caps. ovoid, 3-edged. **p.** 6, 7. *Barren fields and walls.* m. and s. Eur.

β. arvense, Guss. Fl. white.

2. **margaritaceum.** Bulb ovate, simple. Scape leafy at base. L. terete, hollow. Spathe of 1 valve. ✓? Umbel nearly globose, without bulbs, rather lax. Pet. linear, obtuse. Stamens exsert. Caps. turbinate, 3-edged. **p.** 4, 5. Staiti in Cal. *Very near to* A. sphærocephalum. *Pet. white, with a dark green keel.*—Bert.

3. **vineale.** Bulbs simple. Scape leafy at base. L. terete, fistulose. Spathe of 1 valve. Umbel bulbiferous. Stamens exsert: the Anther-bearing Cusp as long as filaments. Pet. oblong, obtuse. **b.** 6, 7. *Sandy meadows and cult.*

β. descendens, Koch, ed. 1. Umbel without bulbs. ✓

ii. *L. flat; i.e., not terete or fistulose, linear.*

4. **descendens.** "Scape terete, leafy to the middle. L. linear, attenuate at top, carinato-triquetrous. Spathe of one valve, caducous. Umbel many-flowered, globose, at last prolonged in the middle. Pet. oblong, obtuse, smooth. Stamens exsert: the Anther-bearing Cusp as long as filaments. **p.** 5, 6. *Hills.* Sic."—Parl. *Joined by Bertoloni to* A. sphærocephalum.

5. **Ampeloprasum.** Scape terete, smooth, leafy to middle, rising from the side of solid, compound bulb. Spathe of 1 valve. Umbel

many-flowered, capsuliferous, always globose. Anther-bearing Cusp equalling oblong filaments. **p.** 5, 6. *Fields.* s. Fr. Basel. Trieste. Italy.

6. **Babingtonii.** "Scape leafy at base. L. acutely keeled. Spathe long, pointed. Umbel loose, irregular, with hemispherical bulbs. Anther-bearing Cusp rather shorter than common filament, with an incurved apex when young. Bulb compound, of about 2 parts. **p.** 8. Galway. Roundstone. s. I. of Arran. Cornwall."—Bab.

7. **Porrum.** Scape terete, leafy, smooth, rising from the centre of a simple bulb. Umbel without bulbs, globose. Stamens somewhat exsert. Anther-bearing Cusp about half as long as filament. **p.** 6, 7. *Warm. Escapes.* G. Sw.

✓ 8. **rotundum.** Bulb formed of numerous bulbels included in a common coat. Scape terete, smooth, leafy to the middle. Umbel capsuliferous, subglobose; the lateral stalks being much the shortest. Pet. subobtuse. Anthers included. Fil. ciliate at base. Anther-bearing Cusp equalling one-third of filament. **p.** 7, 8. *Fields and corn.* s. and c. Fr. Rhine. e. G.

9. **multiflorum.** "L. flat, broadly linear, acute. Umbel capsuliferous, subglobose. Fl. 30–60, on long stalks. Pet. elliptico-lanceolate, rather obtuse, exceeding the pistil, and not ciliate stamens. **p.** *Sandy cult.* Nice. Toulon. Narb. Rous. Toulouse."—Duby.

✓ 10. **Scorodoprasum.** Bulb with numerous small offsets. Scape leafy to middle. L. rough at the edge. Umbel bulbiferous. Stamens shorter than subobtuse petals. Anther-bearing Cusp not half as long as filaments. **p.** 6, 7. s. Fr. G. *occ.* In Sw. *only at* Basel.

11. **ascendens.** "Bulb soboliferous. Scape lateral, ascending, terete, warty at top. L. lineari-lanceolate, keeled, somewhat serrulate. Umbel globose, capsuliferous. Stamens exceeding subobtuse petals. **p.** *Fields.* Apulia."—Ten.

B. *Alternate Stamens with a short tooth on each side.*

12. **acutiflorum.** Bulb simple. Scape leafy at base. Spathe short, of one valve. Umbel nearly globose, rather lax. Organs shorter than lanceolate, acuminate petals. Fil. ciliate at base. Anther-bearing Cusp longest. **p.** 6. e. Prov. Nice. Isl. of Ratonneau near Marseilles. Isl. of Gallinara near Albenga. Mts. betweeen Braus and La Scorena.

13. **Sardoum.** Bulbels stalked. Scape leafy at base. L. subulate, fistulose. Spathe short, of 2 valves. Pet. lanceolate. Stamens exsert. **p.** 7, 8. *Dry pastures.* Mundas, Sard.—Bert.

14. **strictum.** Coat of Bulb reticulate. Stem terete, leafy at base. L. obscurely nerved, membranous, slightly channeled, flat at top. Spathe of 2 valves. Umbel capsuliferous, subglobose. **p.** 7. *Rocky.* Boh. Hesse. Carn. Nicolaithal, Vallais. *rare.*

15. **sativum.** Bulb compressed. Bulbels roundish ovoid, enclosed in a membrane. Stem terete, leafy to middle. Spathe of one caducous, long-beaked valve. Umbel bulbiferous. **p.** 7, 8. *Shores.* Prov. ?

C. *Stamens all simple.*

i. *Bulbs on a horizontal rhizoma.*

16. **Victorialis.** Bulb oblong: coats of entangled fibres. Scape leafy to middle; lower part round. L. elliptic or lanceolate. Umbel subglobose. Stamens exceeding petals. **p.** 7, 8. *Rocky mountains.* Vosges. Jura. Alps. Rieseng. Pyr. ✓

17. **fallax.** Rhizoma woody. Scape naked, ascending, 3-edged at top. L. narrow, without keel. Spathe short, usually tripartite. Umbel fastigiate. Anthers subexsert. **p.** 7, 8. *Mountains.* e. Fr. Sil. Alps. Apenn. ✓

18. **acutangulum.** Coats of Bulb entire. Scape acutely 2-edged at top. L. 5-nerved, acutely keeled. Spathe 2–5-cleft, half as long as capsuliferous, fastigiate umbel. Stamens equalling petals. **p.** 6–8. *Moist meadows.* G. *occ.* ✓

ii. *No creeping horizontal rhizoma.*

a *L. membranous; i. e., not solid nor fistulose.*

* *Scape included in the sheaths of L.*

19. **Chamæmoly.** Scape subterraneous, included in sheaths of L. Bracts simple, short. Caps. subglobose, cernuous. **p.** 1–3. *Dry pastures.* Arles. Mars. Istr. Cors. s. It. ✓

** *Scape exsert.*

† *Scape 2-edged.*

20. **pedemontanum.** "Bulb oblong. Coats sphacelato-fibrillose. Scape somewhat leafy at base. L. acutely keeled. Spathe short, of 1 valve. Rays of Umbel shorter than campanulate flowers. Pet. oblong, obtuse, exceeding stamens. Stigma trifid. **p.** 7, 8. Valle Pisio, Mts. of

Monreale, Pdm. Corni di Canzo. Resegoni in L. Maggiore."—BERT.

†† *Scape nearly semicylindrical, or 3-edged, with 1 very obtuse angle.*

21. **ursinum.** Bulb oblong: coats membranous. Scape naked. L. stalked, elliptico-lanceolate. Bracts single, 2–3-cleft. Umbel capsuliferous. Stamens included. **p.** 4, 5. *Moist shade.*

22. **neapolitanum.** Scape 3-edged, somewhat leafy at base. L. sessile, broad linear. Bract single. Umbel many-flowered, fastigiate. Pet. ovate, very blunt, exceeding organs. Stigma 3-edged. **p.** 4, 5. Toulon. It.

††† *Scape acutely 3-edged: faces furrowed.*

23. **pendulinum.** Scape somewhat leafy at base. L. acutely keeled. Bracts 2, about equalling spreading umbel. Pet. 3-nerved. Stamens included. Cor. top-shaped, afterwards globose. Caps. 3-edged. **p.** 4. *Woods.* Italy. [illegible]

24. **triquetrum.** Scape somewhat leafy at base. L. acutely keeled. Bracts 2, rather shorter than spreading umbel, caducous. Pet. 1-nerved. Fl. cylindrical, afterwards pyramidal. Caps. subglobose. **p.** 4. *Coasts.* mdt. Fr. It. s. of Apennines. [illegible]

†††† *Scape terete.*

‡ *Spathe of* 1 *valve.*

25. **multibulbosum.** "Stem leafless, terete. Root-L. sessile, broad lanceolate, acuminate, flat. Margin smooth. Bract persistent, 2–3-lobed. Umbel convex, 30–50-flowered. Stamens broadly connected at base, exceeding middle of petals. Bulb subglobose, depressed. **p.** 5. *Hilly fields.* Vienna. Bonn."—KOCH.

26. **nigrum.** "Scape striate, somewhat leafy at base. L. thick, lorato-lanceolate, acute, channeled, straight. Spathe short, splitting at last into 3 or 4 parts. Umbel many-flowered (50–60), fastigiate. Pet. lanceolate, stellate, about as long as stamens. Stamens connate at base. **p.** 5. *Hill fields.* Mtp. Apenn. Sic. Sard."—BERT.

β. *magicum.* Head bulbiferous.

27. **narcissiflorum.** L. lineari-subulate, flat. Margin smooth. Umbel 5–8-flowered. Caps. flat at top. Pet. erect, mucronate. **p.** 7. *Stony mountains.* Dau. Prov. *Kunth mentions a rhizoma.* Cf. [illegible]

28. **roseum.** Scape somewhat leafy at base. L. acuminate, channeled, keeled, involute at top, hairless. Margin finely denticulate. Bract 4-cleft. Cor. campanulate. Pet. elliptico-oblong, obtuse, exceeding the stamens and styles, which are of equal length. **p.** 5. *Warm cult.* s. Fr. Fiume. It.

β. *carneum.* Umbel bulbiferous.

29. **permixtum.** "Accessory Bulbels of the root very small. Scapes leafy at base. L. linear, acuminate. Spathe usually 4-cleft. Fl. campanulate. Stamens included. Style twice as long as stamens, equalling or exceeding corolla. **p.** 5, 6. Nebrodes."—BERT. *Hardly different from* A. roseum.

30. **subhirsutum.** Bulb proliferous. Scape leafy at base. L. keeled, somewhat hairy, and ciliate with long hairs. Spathe short. Umbel fastigiate. Pet. oblongo-lanceolate, subobtuse, spreading. Stamens shorter than petals, exceeding style. Caps. very short. **p.** 4, 5. *Warm grassy.* Mtp. Narb. Cors. Osero. It.

31. **trifoliatum.** Bulb subglobose, proliferous. L. keeled at base, hairy on both sides. Style as long, Stamen only half as long, as lanceolate acute petals. **p.** 4, 5. *Fields, &c.* s. It. Sic. Sard.—PARL.

32. **vernale.** "Bulb *small*, round. Scape leafy at base. L. linear, flat, acutely keeled, and somwehat hairy. Spathe trifid. Umbel fastigiate. Stamens about equalling petals, shorter than style. **p.** 3, 4. Palermo."—BERT. *Hardly differs from* A. subhirsutum.

33. **siculum.** Scape thick, terete. L. broad linear, acuminate: the upper Sheath very long. Bract short, undivided. Rays of Umbel nodding, dilated at top into a large floral receptacle. Fl. campanulate. Inner Bract narrowed at base. Stamens included. **p.** 5–7. Nebr. and Busambra in Sic. Gennargentu in Sardinia. [illegible]

‡‡ *Spathe of two valves.*

34. **ochroleucum.** Stem terete, leafy at base. L. 2–3-nerved, acutely keeled, their sheaths transversely truncate. Spathe shorter than rays of capsuliferous subglobose umbel. Stamens exsert. **p.** 7, 8. *Rocky.* Laibach. Mount Nanas, Carn.

35. **suaveolens.** Bulb oblong. Scape leafy at the base. L. narrow, rather thick. Sheaths oblique, truncate. Bracts 2, short. Umbel globose. Pet. ovato-lanceolate, hooded, much shorter than filaments, which are recurved after flowering. **p.** 8–10. *Marshy meadows.*

Dax. Bordeaux. Pyr. lower Aust. Swabia. Bav. n. and m. It. *According to Bertoloni, the scape is sometimes angular.*

36. **Moly.** L. oblongo-lanceolate, acute, sheathing at base. Bracts shorter than fastigiate umbel. Pet. ovate, acute, *yellow.* Stamens about half as long as petals. **p.** Paris. Abbeville. Anjou. Mtp. *Query if a native.*

b. *L. more or less thickened and channeled at base, flat at top. One Bract very long.*

37. **carinatum.** Scape terete, leafy to the middle. L. linear, pulpy, flat, slightly channeled, but not keeled. Spathe persistent. One of the valves with a long beak. Umbel bulbiferous. Stamens equalling petals. **p.** 6, 7. *Fields.* s. Fr. Anjou. G.

38. **oleraceum.** Scape leafy at base. L. somewhat fistulose. Bracts ovate, with a long abrupt acumen. Umbel bulbiferous. Stamens not exceeding corolla. **p.** 7. *Vineyards and cult.* s. and m. Eur.

c. *L. semiterete or convex below and channeled.*

* *L. not fistulose.*

39. **pusillum.** Scape low, leafy at base. Bracts 2, acuminate, shorter than capsuliferous umbel. Cor. campanulate. Pet. oblong, obtuse, exceeding stamens. Caps. roundish, 3-edged. **p.** 5, 6. *Coast.* Pal.

40. **paniculatum.** Scape leafy at base. Bracts 3, much exceeding capsuliferous umbel. Rays subereet. Cor. cylindrical. Pet. oblong, acute, exceeding stamens. **p.** 6, 7. *Open hills.* s. Sw. It. *occ.*

41. **saxatile.** Coats of Bulb entire. Scape terete, leafy at base. L. lineari-subulate, furrowed, hairless, deeply channeled. Bracts 2, mucronate. Umbel convex, capsuliferous. Stamens twice petals. **p.** 8, 9. *Fissures of rocks.* Mte. Spaccato near Trieste.

42. **flavum.** Scape terete, leafy at base. L. not furrowed and hardly channeled. One of the Bracts with a long beak. Fl. *yellow,* campanulate. Pet. obtuse. Stamens exsert. **p.** 6, 7. *Fields and thickets.* Fr. s. Tyr. lower Aust. Mor. Cal. Nebrodes.

43. **montanum** (*flexum*, Koch). "Scape leafy at base. L. semiterete, filled (linear, flat, pulpy, Koch). Spathe of two valves, one with a very long beak. Umbel effuse, sometimes bulbiferous; the outer Fl. nodding. Cor. crucibuliform, somewhat truncate, falling short of stamens. **p.** 7–10. *Thickets and cult.* G. *rare.* It."—Bert.

44. **moschatum.** Bulb oblong: coats reticulate when old. Scape leafy at base. L. filiform. Spathe of 2 short valves. Umbel few-flowered, fastigiate, capsuliferous. Cor. cylindrical, exceeding stamens. **p.** 8, 9. Istria. Fiume. Umbria.

45. **Cupani.** Bulb oblong: coats reticulate when old. Scape leafy. L. filiform. Spathe of 1 lanceolate, acuminate bract. Fl. about 3, erect, cylindrical, exceeding stamens. **p.** 6, 7. Nebrodes. Palermo.

46. **parciflorum.** Bulb ovate: coats membranous. Scape leafy. L. filiform. Spathe tubular, cloven at top. Rays of Umbel unequal, some nodding. Cor. cylindrical. **p.** 8, 9. Cors. Sard.

** *L. fistulose.*

47. **pallens.** Scape leafy at base. L. semiterete, furrowed. Valve of Spathe lanceolate, acuminate. Umbel capsuliferous. Fl. campanulate, obtuse, about as long as stamens. Style in Fl. very short. **p.** 7, 8. *Thickets and cult.* s. and w. Fr. Trieste. It. *Differs from* A. oleraceum *in the want of bulbs, in the umbel, and the gradually tapering point of the bract.*

48. **Coppolerii.** L. terete, channeled. Spathe of 2 valves, one of them exceeding dense globose umbel. Pet. ovate, very obtuse, without a mucro. **p.** 5, 6. *Fields.* Cal. Sic. and sic. Isl.—Parl.

49. **Schœnoprasum.** L. about 1 on the base of the scape, straight, erect. Spathe shorter than umbel. Umbel capsuliferous, contracted, convex. Cor. campanulate. Pet. lanceolate, acuminate, exceeding organs. **p.** 6, 7. *River-sides.* Pyr. and Alps. Moselle. Rhine. Apenn.

50. **sibiricum.** Resembles *A. Schœnoprasum*, but the Petals are not so finely acute; the L. are curved or twisted, instead of straight, and less numerous; and the inner Sheaths are much longer than the outer; while in *A. Schœnoprasum* they are included in the outer, or hardly pass beyond them. **p.** 7. *Moist.* Cornwall. Alps.

808. HEMEROCALLIS.

1. **flava.** Segm. of Cor. with many nerves, but no veins. **p.** 5. *Marshy shade.* lower Vall. Munich. Monfalcone.

2. **fulva.** Segm. of Cor. with nerves and veins; inner wavy at the margin. **p.** 6 (7, 8, Koch). Prov. w. Fr. lower Vall. Bologna. Mantua. Brenta.

CVII. COLCHICACEÆ.

Perianth inferior, in 6 (or 7) parts. Anthers bursting outwards. Ovaries 3; or 1, with 3 cells. Fruit of 3 follicles, bursting inwards, more or less combined into a 3-celled Capsule.

809. BULBOCODIUM.

1. **vernum.** L. lanceolate. Blade of the Pet. subauriculato-cucullate. *Fl. sometimes 4-partite.* **p.** 2, 3. *High pastures.* Pyr. Nice. Cors. Alps of Dau., Prov., Sw., and Pdm.

810. MERENDERA.

1. **Bulbocodium.** L. linear, spreading, appearing nearly with the flowers. *High pastures.* Pyr.

811. COLCHICUM.

1. **autumnale.** Bulb usually many-flowered. L. lanceolate, acute, appearing after flowers. Segm. of Cor. oblongo-lanceolate, with wavy nerves, nearly without veins. Three Fil. placed higher than the others. Anthers oblongo-linear. **p.** 8, 9. *Moist meadows. Fl. occasionally appear with the L. in the spring, sometimes like the autumnal ones, sometimes herbaceous, with long linear segments.*

2. **alpinum.** Bulb 1-flowered. L. lineari-lanceolate, obtuse, appearing after the flowers. Segm. of Cor. lanceolate, with wavy nerves. Fil. placed equally. **p.** 7, 8. *Moist mountain meadows.* Dau.? s. Vallais.

3. **arenarium.** Bulb 1–3-flowered. L. appearing after flowers, lineari-lanceolate, channeled. Div. of Cor. with straight nerves. **p.** 9, 10. *Barren hills.* s. Istria.

4. **Bivonæ.** Bulb many-flowered. L. appearing after flowers, lineari-lanceolate, flat, keeled. Segm. of Cor. broad ovato-oblong, reticulate, with prominent veins. **p.** 9, 10. Campo Casso. Trevento in Umbria. Sic.

5. **montanum.** Bulb 1–7-flowered. L. appearing with flowers, lineari-lanceolate, reflexed. Div. of Cor. many-nerved, without intermediate veins. Anthers oblong. **p.** 9, 10. Genoa. Otranto. Sic. Sard.

812. VERATRUM.

1. **nigrum.** Segm. of Cor. elliptic, quite entire. Stalks exceeding bracts, about as long as flowers. Lower L. broad elliptical, hairless. *Fl. dark purple.* **p.** 7, 8. *Mountain woods and pastures.* Burg. Nice. Aust. s. G. Monte Generoso.

2. **album.** Segm. of Cor. oblongo-lanceolate, denticulate. Stalks shorter than bracts or flowers. L. narrow elliptic, pubescent beneath. **p.** 7, 8. *Mountain meadows.* Fr. Alps. Sil. Fl. *white within.*

β. lobelianum. Fl. pale green.

813. TOFIELDIA.

1. **calyculata.** Stalks with 2 bracts: the lower oblong; the upper calyx-like, 3-lobed. L. lineari-ensiform, many-nerved, very acute. **p.** 7, 8. *Boggy mountain pastures.* G.

2. **palustris.** Stalks with one 3-lobed bract at the base, naked at top. L. with about 3, remote nerves. **p.** 7, 8. *Boggy mountain pastures.* Br. Alps.

CVIII. JUNCEÆ.

Perianth inferior. Sepals glume-like (except in the first two genera). Stamens 6, inserted in the base of the sepals; or 3, opposite to the outer series. Ovary 3-celled. Style 1.

814. NARTHECIUM.

1. **ossifragum.** Rac. uninterrupted. One Bract at the base, and the other above the middle of each partial stalk. **p.** 7, 8. *Bogs.*

815. APHYLLANTHES.

1. **monspeliensis.** Scape naked. Fl. 1–2, sessile, surrounded by scariose scales. **p.** 5, 6. *Stony.* mdt. Fr. Nice.

816. JUNCUS.

A. Plants with numerous Barren Stems, sheathed at base, but (except in *J. Jacquini*) leafless.

i. Seeds with appendages. Sp. 1–4.

ii. Seeds without appendages. Sp. 5–13.

B. No Barren Stems. Seeds with Appendages.

i. Bracts short. Head evidently terminal. Sp. 14–17.

ii. Bracts 2 or 3, long, setaceous. Sp. 18, 19.

C. No Barren Stems. Seeds without appendages.

i. Flowers clustered.

a. L. fistulose, without interruption. Sp. 20.

b. L. fistulose, compresso-terete, divided into cells. Sp. 21–30.

c. L. channeled, setaceo-subulate. Sp. 31–35.

ii. Flowers solitary. Sp. 36–43.

A. *Plant with subulate barren stems, with sheaths, but (except in* J. Jacquini) *without L.*

i. *Seeds with appendages; the covering being extended into a sort of bag on each side.*

✓ 1. **acutus.** Stems very pungent. Pan. supradecompound, crowded (falling short of stem, Guss.). Inner Sep. very obtuse or emarginate. Caps. subglobose, acuminate, twice as long as calyx. **p.** 7, 8. *Sandy shores. Somewhat rare.*

2. **multibracteatus.** "Stems pungent. Pan. supradecompound, lax. Stalks unequal, few-flowered, exceeding the 2-leaved involucre (the apparent stem). Bracts unequal, filiform, mucronate. Caps. oblong, beaked, twice as long as sepals. **p.** 5, 6. *Moist.* Castro Nuovo, Sic."—Guss.

✓ 3. **maritimus.** Stems rather pungent. Pan. lax, decompound. Sep. acute, as long as elliptic, mucronate capsule. **p.** 7, 8. *Salt marshes.*

β. *rigidus.* Fl. fewer. Sep. setaceo-acuminate.

4. **Jacquini.** Fertile Stems with a single L., often remote from flowers. Head 4–8-flowered, stalked. Sep. lanceolate, half as long as acute capsule. **p.** 6, 7. *High moist.* Alps. ✓

ii. *Seeds without appendages.*

5. **effusus.** Stem smooth, with continuous pith. Pan. lax, decompound, many-flowered. Sep. very acute. Stamens 3. Caps. obovoid, retuse, the very short base of style remaining in a terminal hollow. **p.** 6, 7. *Moist clayey.* ✓

6. **conglomeratus.** Stem smooth, with a continuous pith. Pan. crowded, decompound. Sep. very acute. Stamens 3. Caps. obovoid, retuse. Base of Style remaining on a little tubercle. **p.** 6, 7. *Moist clayey.* ✓

7. **diffusus.** "Stem finely striate, *green (not glaucous) above the dark-purplish sheaths.* Pith continuous. Pan. crowded, decompound. Sep. very acute. Stamens 6. Caps. obovoid, mucronate with the persistent style. **p.** 6, 7. *Ditches.*"—Koch. *Apparently not very rare in a moist clayey soil, but botanists are not agreed on the value of the separate characters.* ✓

8. **balticus.** Stem quite smooth. *Sheaths at base of a pale drab.* Pith continuous. Pan. decompound, diffuse, many-flowered. Sep. mucronate; the inner subobtuse. Caps. elliptic, obtuse, mucronate. **p.** 7, 8. *Shores.* e. Scot. n. G. ✓

9. **glaucus.** Stems scored. Sheaths at base polished, dark chestnut. Pith interrupted, forming cells. Pan. decompound. Branches nearly alike. Sep. very acute. Caps. oblongo-elliptic, obtuse, mucronate. **p.** 6–8. *Moist clayey. It is said that this sometimes occurs with continuous pith, and sometimes the stem is only finely striate: when these characters are united, it would be difficult to distinguish the plant from* J. diffusus. ✓

10. **paniculatus.** Stems scored. Pith interrupted. Pan. decompound, lax. Outer Branches prolonged, proliferous. Fl. remote. Sep. very acute. Caps. oblongo-elliptic, obtuse, mucronate. **p.** 7, 8. *Shores* of Adriatic. —Koch. ✓m

11. **fistulosus.** Stem quite hollow, smooth or finely striate. Corymb supradecompound, spreading. Sep. lanceolate, acuminate. Caps. ovoid, acutely 3-edged. **p.** 5, 6. *Streams.* Palermo.

12. **arcticus.** Stem smooth, stiff and ✓

quite erect. Corymb about 7-flowered. Sep. without mucro; the inner subobtuse. Style evident. Caps. oblong, obtuse, mucronate. **p.** 6, 7. *Very high micaceous.* Matterhorn. Monte Moro. Schlehern and Doronthal in s. Tyrol. Belluno.

✓ 13. **filiformis.** Stem smooth, not stiff. Corymb nearly simple, about 7-flowered. Sep. lanceolate, acute. Style hardly any. Caps. nearly spherical, with a short mucro. **p.** 6, 7, 8. *Lakes and peaty mountain meadows.* Br. Loire. Pyr. Alps. also in the plains of n. G *The scales at the base of the stalk sometimes end in a little L.*

B. *No barren Stems. Seeds with appendages.*

i. *Bracts short. Head evidently terminal.*

✓ 14. **stygius.** Stem with 1 or 2 setaceous L. Heads 1–2, terminal, 3-flowered. Sep. acute, half as long as oblong, acute capsule. Anthers 6, much shorter than filaments. Root fibrous. **p.** 8. *Very high boggy.* s. Tyr. Carn.

15. **castaneus.** Root creeping. L. channeled, sheathing at base. Stem simple, with 2 or 3 L. Heads mostly in pairs, many-flowered, with leafy bracts. Sep. lanceolate, acute, shorter than oblong, obtuse capsule. Fil. twice as long as anthers. **p.** 7, 8. *Mountain pastures.* Sc. Tyr. Carinthia.

16. **biglumis.** L. somewhat channeled, sheathing base of otherwise naked, channeled stem. Head solitary, of 2 unilateral flowers, surmounted by a leafy bract. Fil. capillary. Anthers short. Caps. retuse. **p.** 8. *Mountain rills.* Highlands of Sc.

✓ 17. **triglumis.** L. somewhat channeled, sheathing base of otherwise naked, terete stem. Heads solitary, of 2–4 erect flowers. Bracts membranous; *one of them sometimes terminated by a leafy point.* **p.** 7. *Mountains.* Not in the Pyr. or Apenn.

ii. *Bracts or floral L. 2 or 3, long, setaceous.*

18. **trifidus.** Stem filiform, 1–3-flowered, sheathed at base; the upper sheath bearing a very short L. (Caps. with a long beak, Bert.) **p.** 7, 8. *Fissures of high moist rocks.*

19. **Hostii.** Stem filiform, 1–3-flowered, sheathed at base. L. of the upper sheath half as long as stem. **p.** 7, 8. *High calc. rocks.* Tyr. Salzb. Styria. Aust.

C. *No barren Stems. Seeds without appendages.*

i. *Flowers clustered.*

a. *L. terete, fistulose, without partitions.*

20. **multiflorus.** Root creeping. Culm leafy, scaly at base. L. terete, pungent. Corymb supradecompound, long, straight, spike-like. Fl. solitary, approximate. **p.** 6. *Marshes.* Lecce. s. Sicily. Sardinia. Corsica. ✓

b. *L. compresso-terete, fistulose, divided by horizontal partitions.*

21. **obtusiflorus.** Stem and sheaths terete. Pan. decompound. Lateral Branches refract. Sep. obtuse, without mucro, equalling ovate, acute capsule. **p.** 7. *Wet.* ✓

22. **alpinus.** Sheaths of L. with acute dorsal angle. Pan. compound, erect. Sep. equal, very obtuse, shorter than ovato-oblong, mucronate capsule; the outer with a mucro below the summit. **p.** 7, 8. *Moist.* Alps. Pyr. n. G. ✓

23. **lamprocarpus.** Stem and L. compressed, without an edge. Pan. decompound, very spreading. Sep. of equal length, mucronulate: inner obtuse; outer acute, shorter than ovato-lanceolate, mucronate, polished capsule. **p.** 7, 8. *Wet.* ✓

24. **anceps.** Stem 2-edged at base. L. somewhat compressed, slightly 2-edged. Heads in an erect decompound panicle. Inner Sep. obtuse; outer acutely mucronate, shorter than ovato-ellipsoid, 3-edged, rostrate capsule. **p.** Mtp. Bayonne. Le Mans.—Duby.

25. **lagenarius.** Heads in a cymose panicle. Sep. lineari-lanceolate, nearly equal, acute, shorter than turbinate, somewhat 3-edged capsule. **p.** s. Fr.—Duby.

26. **nigritellus.** (L. nearly cylindrical, Sm.) Pan. terminal. Branches long, nearly simple. Heads remote, many-flowered. Sep. lanceolate, nearly equal: outer acuminate; inner acute, rather shorter than oblong, abruptly rostrate capsule. Anthers 6, half as long as filaments. **p.** 7. *Highlands* of Sc.

27. **striatus.** Pan. decompound, divaricate. Sep. equal, lanceolate, acuminate, about equalling the oblong, 3-edged, acuminate capsule. **p.** 4, 5. *Marshy.* Sic.—Parl., *who refers to this the* J. Castelli *of Guss.*

28. **acutiflorus.** Pan. repeatedly com- ✓

pound, forked. Sep. acuminate, awned; the inner longer; all shorter than ovate, somewhat rostrate capsule. L., when dry, finely striate. **p.** 7, 8. *Wet.*

β. brevirostris, Nees ab Es. The Heads larger and fewer.

✓ 29. **atratus.** Pan. decompound, spreading. Sep. acuminate; inner longer, nearly equalling ovoid, acuminato-rostrate capsule. L. furrowed when dry. **p.** 7, 8. *Wet.* Sax.

30. **repens.** "Stem creeping. L. not placed at divisions of branches. Heads in a simple panicle. Sep. lanceolate, acute. **p.** *Moist bed* of Durance. Cherbourg. *Perhaps a var. of* acutifolius."—Duby.

c. *L. setaceo-subulate, channeled.*

✓ 31. **supinus.** Stem and L. indistinctly fistulose and partitioned. Heads lateral and terminal, about 3-flowered. Sep. lanceolate, exceeding oblong, obtuse, mucronate capsule. Fil. about as long as anthers.

✓ 32. **pygmæus.** Root fibrous. L. filiform, dilated into a sheath at base. Stem-L. 0 or 1. Heads sessile and stalked, with very small ovali-scariose bracts. Stamens 3. Sep. linear, acute, exceeding long, acute, 3-edged capsule. **a.** 6. *Wet pastures.* s. and w. Fr.

33. **bicephalus.** "Root fibrous. Stem terete. L. filiform. Stem-L. solitary, dilated into a sheath at base. Heads 2 or 3, one of which is sessile and one stalked. Bracts scariose, ovato-lanceolate. Fl. at last cylindrical, exceeding the acuminate capsule. Sep. nearly equal, narrow lanceolate, many-nerved. **a.** 4, 5. *Marshes.* Bonifacio."—Bert.

34. **triandrus.** "Stem naked. Root-L. setaceo-subulate, channeled. Heads 1 or 2, sessile and stalked when in fruit: the lower Bract spreading or ascending. External Sep. ovato-lanceolate, acuminato-cuspidate, exceeding ovoid, obtuse capsules. **p.** 4, 5. *Moist.* s. Istria."—Bert.

✓ 35. **capitatus.** Stem angular, leafless. L. sheathing base of stem. Heads 1–3. (Outer Bracts strictly erect, Koch.) Sep. ovate, acuminato-cuspidate, exceeding the ovoid capsule. **a.** 6–8. *Sandy fields.* Jersey. s. and w. Fr. Rhine. It.

ii. *Flowers solitary (except in a variety of* J. bufonius*).*

✓ 36. **compressus.** Stem compressed. L. linear. Branches of Pan. erect, corymbose. Sep. ovato-oblong, very obtuse, shorter than subglobose capsule. (Style as long as germen, Koch.) (Pan. shorter than bracts, Sm.) **p.** 7, 8. *Moist meadows.*

✓ 37. **Gerardi.** Stem nearly terete. L. linear. Branches of Pan. erect, corymbose. Sep. ovate, obtuse, nearly equalling the oblongo-oval, somewhat 3-edged capsule. Style as long as germen. (Pan. exceeding bracts, Sm.) **p.** 7, 8. *Salt marshes.* Eng. G. *Probably a var. of the preceding.*

✓ 38. **squarrosus.** L. numerous, linear, channeled, sheathing the base of the stem. Pan. terminal, compact. Outer Sep. ovato-lanceolate, rather abruptly acute, equalling obovate, mucronate capsule. Anthers four times as long as filaments. **p.** 6, 7. *Peaty heaths.* Br. Fr. m. and n. G. *Not in It.*

✓ 39. **Tenageya.** L. filiform. Corymb dichotomous. Fl. solitary, remote, sessile. Sep. ovato-lanceolate, (equalling, Duby) (rather exceeding, Koch) subrotundo-turbinate capsule. **a.** 6, 7. *Splashes.* Fr. Rhine. Pdm. Mil. Tusc. Cors.

40. **sphærocarpus.** "Culm with 1 or 2 L. L. setaceous, channeled at base. Branches of Pan. long, bifid, erect. Fl. remote. Sep. oblongo-lanceolate, acuminate, mucronate, exceeding obtuse, subrotund capsule. **p.** 6, 7. *Wet.* Franc. Vienna. *A different species from* Tenageya."—Koch.

✓ 41. **tenuis.** "Stem sheathed at base, but without L. L. linear, channeled, erect. Pan. crowded. Branches cymose, spreading. Sep. lanceolate, attenuato-acute, 3-nerved, rather longer than ovato-oblong capsule. Fil. longer than anther. **p.** 6, 7. *Bushy borders.* Upper Swabia. Holstein. near Hamburg."—Koch.

✓ 42. **bufonius.** L. setaceous. Pan. forked, exceeding bracts. Upper Fl. usually approximate. Sep. lanceolate, acuminate, exceeding the oblong, obtuse capsules. *Fl. usually solitary.* **a.** 7, 8. *Moist.*

β. insulanus, Guss. Fl. clustered. Inner Sepals acute; outer acuminate.

43. **ambiguus.** "Glaucescent. Root fibrous. Culm leafy at base. Corymb subdichotomous. Fl. solitary, approximate, sessile. Outer Sep. acute; inner obtuse, equalling oblong, obtuse capsule. **a.** 4, 5. Piana de' Greci, Monreale, *Marshes* at Spaccaforno, Sic." —Bert.

817. LUZULA.

A. *Seeds with a large crest-like appendage.*

1. **flavescens.** Umbel nearly simple. Branches erect. Crest falcate. Root stoloniferous. **p.** 6, 7. *Mountain woods.* c. Pyr. Jura. Alps. *Not in It.*

2. **pilosa.** Corymb umbel-like, generally compound. Branches in fruit reflexed. Fl. solitary. Crest falcate, acute. Caps. pointless. **p.** 4, 5. *Woods. Dr. Bromfield finds in the Isle of Wight what is perhaps a variety of this, with much smaller Fruit and the crest of seeds not falcate.*

3. **Forsteri.** Corymb umbel-like, generally compound. Branches erect. Fl. solitary. Crest straight, very obtuse. Caps. with a point. **p.** 5. *Woods.*

B. *Seeds nearly without appendage.*

i. *Flowers solitary.*

4. **glabrata.** L. hairless! Pan. decompound, divaricate, exceeding floral L. Sep. lanceolate, finely acuminate, somewhate exceeding ovato-subrotund, shining, mucronate capsule. (Fil. one-sixth of anther, Koch.) **p.** 6, 7. (*Calc. mountains,* Koch.) (*Moist pastures,* Auv. e. Prov. c. Alps, Duby.)

5. **parviflora.** L. hairless, except at opening of sheath. Corymb compound, erect, divaricate. Sep. lanceolate, acuminate, exceeding capsule. (Fil. half anther, Koch.) **p.** Pyr. w. Alps. *rare.*

ii. *Flowers clustered.*

6. **græca.** Sep. acuminate, exceeding elliptic, obtuse, mucronate capsule; otherwise like *L. sylvatica.* **p.** 5, 6. *Woody hills.* s. It. Sicily.

7. **sylvatica.** Pan. decompound, lax. Stalks 3-flowered, exceeding floral L. Sep. mucronate, about equalling ovate, 3-edged, acuminate capsule. Fil. very short. *Fl. brown.* L. hairy on the edge. **p.** 5, 6. *Woods and moist rocks.*

8. **spadicea.** Pan. decompound, exceeding floral L. Stalks flexuose at top, 4-flowered. Sep. lanceolate, acuminate, about equalling capsule. L. bearded at base. **p.** 6, 7. *Mountain meadows.* m. Eur.

9. **nivea.** Pan. decompound, falling short of floral L. Stalks about 6-flowered. Sep. lanceolate, acute, without mucro; outer one-third shorter than inner. L. hairy. *Fl. very white.* **p.** 6, 7. *Alpine valleys.* Fr. Sw. n. It. Tyr.

10. **albida.** Pan. decompound, falling short of floral L. Stalks about 4-flowered. Sep. ovato-lanceolate, nearly equal, with a small mucro, exceeding capsule. L. hairy. *Fl. white.* **p.** 6, 7. *Woods.* m. Eur.

11. **lutea.** Pan. decompound: clusters rounded, spike-like. Sep. nearly equal, lanceolate, mucronate, shining, *yellow,* equalling the subrotundo-ovate, 3-edged, mucronate capsules. L. without hairs. **p.** 7, 8. *Mountain pastures.* Pyr. Alps. n. Apenn.

12. **arcuata.** Pan. subumbellate, of a few, 3–5-flowered clusters, on long, drooping stalks. Sep. broad lanceolate, bristle-pointed. Fil. as long as anthers. Caps. roundish ovate. Seeds scarcely appendaged at base. L. linear, channeled, curved, rather hairy. **p.** 7, 8. *Very high.* Cairngorum. Sutherland.

C. *Seeds with a conical appendage at base.*

13. **campestris.** Spikes ovoid, in umbels, sessile and stalked. Sep. acuminate. Anthers many times longer than filaments. Caps. obtuse, mucronate. **p.** 3 – 5. *Pastures and heaths.*

14. **multiflora.** Spikes ovoid, in umbels, sessile and stalked. Sep. acuminate, mucronate. Anthers about as long as filaments. Caps. obtuse, mucronate. **p.** 5, 6. *Woods and mountain heaths.*

β. *congesta.* Spikes all nearly sessile.

γ. *nigricans.* Spikes dark brown. L. often quite hairless.

15. **pediformis.** Clusters sessile and stalked, in a compound panicle. Outer Sep. rather the longest, acuminato-aristate. Caps. ovoid, acuminate. **p.** 6, 7. *Mountains.* e. Pyr. Prov. Dau. Mont Cenis.

16. **spicata.** Spikelets sessile in a somewhat interrupted spike. Sep. lanceolate, acuminato-aristate. Caps. obtuse, apiculate. **p.** 6–8. *High pastures.* Sc. Auv. Jura. Alps. Pyr. Riesengeb. Apenn. Cors.

CIX. PALMÆ.

Mostly Trees, with a simple stem and a tuft of large L. at the top. In the only European plant, the Stem in its wild state is rarely more than two or three feet in height. The L. are flabelliform, and plicate in the vernation.

818. CHAMÆROPS.

1. **humilis.** Stem thorny. L. palmato-plicate. Stalks prickly. **S.** 3, 4. *Shores.* Nice. Monte Circ. Sicily.

CX. AROIDEÆ.

Flowers on a simple fleshy spadix, separate, and thin, naked; or complete and furnished with a Perianth of 3–6 inferior scales. Anthers bursting outwards. Fruit not bursting.

819. ARUM.

A. *Spadix with cirrhiform glands above the anthers.*

1. **crinitum.** L. pedate: middle Lt. entire; lateral laciniato-pinnatifid. Spadix cylindrical, covered with long bristles, exceeding obovate spathe. **p.** In the Island of Lavezzi between Cors. and Sard.

2. **Dracunculus.** Root-L. pedate. Lts. entire. Spadix lanceolate, exceeding hairless, ovate spathe. **p.** 6. *Shade.* Agen. Anjou. roman Apenn. K. Nap.

3. **cylindricum.** L. hastato-sagittate with dark spots. Upper part of Spadix lineari-cylindrical, shorter than spathe. Cirrhiform Glands below, as well as above, anthers. **p.** 6, 7. *Grassy hills.* Madonie.

4. **maculatum.** Root-L. hastato-sagittate. Lobes deflexed, *often with dark blotches.* Spadix club-shaped, shorter than spathe. **p.** 5. *Shade.*

5. **italicum.** Root-L. hastato-sagittate. Lobes divaricate, *white along the veins.* Spadix club-shaped, shorter than spathe. **p.** 4. *Shade.* s. and w. Fr. Fiume. It.

6. **pictum.** Root-L. cordato-oblong, sometimes fleshy, channeled on the veins, and sometimes white. Spadix club-shaped, shorter than the ovate, acuminate spathe. **p.** Ajaccio.

B. *No cirrhiform glands.*

7. **proboscideum.** L. hastato-sagittate. Spadix incurved. Spathe ending in a very long filiform point. **p.** 5. *Thickets.* Albano.

8. **Arisarum.** L. cordato-sagittate, obtuse, with a small acumen. Spadix cylindrical, incurved, shorter than hooded spathe. **p.** 3. *Coasts* of Mdt.

9. **tenuifolium.** L. lanceolate, narrow. Spadix slender, subulate, exceeding lanceolate sheath. **p.** 5. *Bushy.* Tusculum. Tivoli. *There are a few scales on the spadix above the anthers.*

C. *Obtuse Glands between stamens and germen.*

10. **Colocasia.** L. cordato-peltate, repand. **p.** 4, 5. *Slow waters.* Pal. Between Syr. and Agosta.

820. CALLA.

1. **palustris.** L. cordate. Spadix everywhere covered with germens and anthers. Sheath flat. **p.** 6, 7. *Still water.* Als. Lor. G. *Not in Sw.*

821. ACORUS.

1. **Calamus.** Scape with a very long leafy extremity. **p.** 6, 7. *Water.* Eng. Fr. *occ.* Ger.

822. AMBROSINIA.

1. **Bassii.** L. ovate, flat, without spots. **p.** 12–3. *Open grassy.* Sic.

2. **maculata.** L. elliptic, and somewhat spotted. Margin wavy. **p.** 12–3. *Open grassy.* Sic.

3. **reticulata.** L. ovato-elliptic, flat, with a net-work of whitish veins. Margin wavy. **p.** 12–3. *Grassy rocks.* Sic.

CXI. TYPHACEÆ.

Flowers crowded, monœcious. Barren Spikes or Heads above the fertile. Perianth of 3 or more scales or bristles. Anthers 3. Style 1. Ovary superior, with a single seed.

823. TYPHA.

1. **latifolia.** L. linear, flat, as long as scape. Barren and Fertile Spikes usually contiguous, each cylindrical. Stigmas far exceeding the setas. (Axis of the Fertile Spike without hairs; those at the base of seeds filiform, very slender. Fr. ovato-oblong, GODR.) **p.** 6, 7. *Still water.* ✓

2. **Shuttleworthii.** "L. linear, longer than flowering culm. Spikes cylindrical, contiguous. Fil. two or three times as long as anthers. Fertile Fl. without bracts. Setas reaching to the extremity of the stigma. **p.** 7, 8. In the Aar."—KOCH. ✓

3. **glauca.** "L. linear, flat. Spikes cylindrical, contiguous. Hairs at Base of Seeds filiform, white. Stigma lineari-subulate. Fr. acute at each end. **p.** 7. *In a pool* at Villers-les-Nancy."—GODR.

4. **angustifolia.** L. linear; lower part channeled; as long as scape. Barren and Fertile Spikes usually separate, each cylindrical. (Fertile Fl. usually with a filiform bract, KOCH.) (Axis of the Fertile Spike covered with spatulate hairs, coloured at the tip, GODR.) **p.** 6, 7. *Still water.*

5. **minima.** L. of Flowering-stems lanceolate, shorter than scape; those of the barren shoots narrow linear. Spikes separate: fertile elliptical. **p.** 4, 5. *Beds of rivers.* s. e. Fr. Rhine. ✓

824. SPARGANIUM.

1. **ramosum.** L. 3-edged at base: sides concave. Stem branched. Stigmas linear. **p.** 7, 8. *Ditches, &c.* ✓

2. **simplex.** L. 3-edged at base; sides flat. Stem simple. Stigmas linear. **p.** 7, 8. *Ditches.* ✓

3. **natans.** L. flat, floating. Stem simple. Stigma oblong (ovoid, very short, DUBY). Barren Spike usually solitary. **p.** 7, 8. *Pools and marshes. occ.* ✓

CXII. CYPERACEÆ.

Flowers glumaceous, disposed in catkins. Glume of 1 valve; or if of 2 valves, the inner valve, as in *Cyperus*, attached to the rachis, or, as in *Carex*, transformed into a bag, containing the seed, and falling off with it. In some plants there are hypogynous scales within the glume. Stamens 3. Anthers entire at top. Ovary superior.

825. CYPERUS.

A. *Spicules sessile, in a simple umbel. Stigmas* 2.

1. **mucronatus.** Involucre of 2 L.: one much exceeding Spikes; one very short. Spikes 2–3, lateral. Scape erect, round below, 3-edged above. Root creeping. **p.** 6–8. *Ditches.* Between Nice and mouth of Var.

β. cossyrensis, GUSS. Spikes shorter. Glumes more obtuse.

B. *Spicules forming a head. Stigmas* 2.

2. **globosus.** Head globose. Spicules lineari-lanceolate, obtuse, flat. Glumes obtuse, closely tiled. Invol. very long, of many L. **p.** 6, 7. Between Nice and the Var. ✓

3. **polystachyos.** Culm naked. Head compound. Spicules lanceolato-linear, acute. Glumes subemarginate, mucronulate, with 1 or 2 nerves on each side of keel. Invol. very long, with many spinuloso-ciliate L. **p.** 8. *Hot vapours.* Ischia.

C. *Inflorescence in a sort of Umbel. Rays very unequal.*

i. *Spicules in an umbellule or lax head.*

4. **flavescens.** Heads sessile and stalked, in a sort of umbel, sometimes solitary. Spicules lanceolate. Glumes obtuse. Stigmas 2. Seeds *black*, subrotundo-lenticular, with a mucro. 1 or 2 L. of Invol. exceeding umbel. **p.** 7, 8. *Marshy.* m. and s. Eur. ✓

β. Gussonii. Seeds bay. Pal.

5. **fuscus.** Umbellules many, sessile and stalked, in a sort of umbel. Spicules linear. Glumes ovate, mucronulate. Stigmas 3. Seeds acutely 3-edged. Invol. of about 3 L., exceeding umbel. **p.** 7, 8. *Marshy.* m. and s. Europe.

ii. *Spicules numerous, in a dense head or spike.*

6. **glaber.** Heads dense, globose, in a simple umbel. Spicules lineari-lanceolate, very numerous. Glumes emarginate, mucronulate, many-nerved. Invol. very long, of many L. **a.** 9, 10. Ronca near Verona. Lucania. Apulia. Sicily.

7. **difformis.** Heads about 3; the middle sessile, globose. Spicules linear, rather turgid. Glumes ovate, obtuse. Invol. of about 2 very long L. **a.** 7–9. *Rice-grounds.* Milan. Sicily.

8. **glomeratus.** Heads globose, ovate and cylindrical. Umbel compound. Spicules linear, acuminate. Glumes oblongo-linear, toothed at the end. Invol. very long, 3–4-leaved. **p.** 9. *Grassy hills.* Extensively on the Po. Trieste. Abruzzi.

iii. *Spicules* 3–8, *in a spike.*

a. *Root tuberous.*

9. **esculentus.** Runners bearing on their fibres ovoid, zoned, *sweet* tubers. Culm naked. Bracts 5. Umbel not producing secondary umbels. *Spicules pale yellow.* Glumes everywhere nervose. **p.** 7, 8. *Nat. in sandy fields.* Drepano. Aquileia.

10. **Tenorii.** Fibres of the creeping Root bearing small spherical, zoneless, *bitter* tubers. Umbel simple. Spicules *of a golden yellow,* few. Invol. of 3–5 L., exceeding umbel. Glumes everywhere nervose, retuse. **p.** 7–9. *Sandy shores.* mdt. It. s. Nap. Sic.

11. **rotundus.** Root tuberous. Tubers *sweet-smelling,* indistinctly zoned. Umbel simple. Invol. rather exceeding umbel. Spicules few. Glumes striate only near the keel. Stigma tripartite, very long. Seed oblong, 3-edged. **p.** 7, 8. *Coast* of Mdt.

b. *Root creeping, sometimes thick and fleshy, but not bearing distinct tubers.*

12. **badius.** Spikes 3 or 4, on the longer branches of the umbel; the lateral Spikes placed nearly at a right angle. Spicules lineari-lanceolate, acute. Root creeping. **p.** 7, 8. *Marshy.* Burtschied near Aachen. Eifel. Sic. *Parl. considers this the same as* C. tenuiflorus. *Koch doubts.*

13. **longus.** Root tortuose, with thick runners. Umbel compound. Spicules linear, acute, flat. Glumes lanceolate, obtuse, closely tiled. Seed acutely 3-edged, thicker upwards. General Invol. very long. **p.** 7, 8. *Marshes.* s. and w. Fr. *occ.* s. Sw. s. Tyr. It.

β. badius. Spicules of a chestnut brown. Sic. Cal. *rare.*

14. **myriostachys.** Umbel bearing compound spikes. Spicules obtuse. Seed exactly 3-edged, quite smooth. Stigma tripartite. Invol. of 3 L., exceeding umbel. Scape 3-edged, thick. Root creeping. **p.** 7, 8. Calabria. *Nearly resembles* C. Monti.

15. **Monti.** Umbel bearing compound spikes. Spicules rather turgid, lanceolate, not crowded, obtuse. Seed compressed, obovate, striate. Stigma bifid. Invol. very long. Scape thick, 3-edged. **p.** 8, 9. *Ditches and marshes.* s. Fr. s. Sw. s. Tyr. n. and m. It.

16. **neglectus.** "Umbel subcompound, of about 4 rays. Invol. of about 3 L.: two of them twice or three times as long as the umbel. Spicules linear, obtuse, *chestnut,* in clusters of from 3 to 8 on the summit of the simple rays. Scales oblongo-lanceolate, subobtuse, nerved, remote from one another. Stigmas long, exsert. Seed obovato-elliptic, acutely 3-edged, brown, nearly smooth. Culm 3-edged, leafy at base. Root creeping. **p.** 7–10. *Banks of streams.* Pal."—Parl.

D. *Umbel compound. Primary Rays very long. Spicules in nearly sessile Spikes.*

17. **Papyrus.** Scape obtusely 3-edged. General Umbel fastigiate, exceeding involucre. Partial Umbel of 3 or 4, nearly sessile spikes. Involucels of 3 very long L. Seed 3-edged. **p.** 7, 8. Fountain Cyane, Sic.

826. SCHŒNUS.

1. **mucronatus.** Seeds without bristles at the base. Spicules ovate, in a dense, hemispherical, terminal head. Invol. very long, spreading, many-leaved. Culm round, naked. L. channeled. **p.** 6, 7. *Sandy shores.* Mdt.

2. **nigricans.** Bristles at base of Seed very short. Spicules 5–10, in a roundish, terminal head. Outer L. of Invol. long, subulate. Culm round, naked. L. subulate, flat. **p.** 5, 6. *Peaty or sand.*

3. **ferrugineus.** Bristles 3–5, exceeding seed. Spicules 2–3, in a lateral head, on the summit of the round, naked culm. L. of Invol. 2, nearly equal. L. subulate. **p.** 5, 6. *Peaty meadows.* Jura. Prov. G. Sw.

827. CLADIUM.

1. **Mariscus.** The Stem round, smooth, branched, leafy. Spikes in heads, in a compound panicle. L. prickly on the margin and keel.

828. RHYNCHOSPORA.

1. **alba.** Spicules crowded in a fastigiate, somewhat corymbose head, equalling involucre. Stamens 2. Bristles of Seed about 10. L. subulate. **p.** 7, 8. *Boggy meadows.*

2. **fusca.** Spicules crowded in an ovato-oblong head, much shorter than involucre. Bristles of Seed 3. L. filiform. **p.** 6, 7. *Boggy meadows. occ. Not in It.*

829. BLYSMUS.

1. **compressus.** Stems 3-edged. L. keeled. Lower Bract subulate, somewhat leafy. Spike 2-rowed. Spicules of 6–8 florets. Bristles of Seed with reversed prickles. **p.** 7, 8. *Moist pastures.* n. and m. Eur.

2. **rufus.** Stem round. L. very narrow, grooved. Bracts membranous. Spicules of 2–5 florets. Bristles (if any) with erect pubescence. **p.** 6, 7. *Salt meadows.* Br. n. G.

830. SCIRPUS.

A. Culm simple, with a solitary terminal spike.
  i. *Heleocharis.* Style dilated at base, but contracted at its union with the germen.
    a. Stigmas 2. Seed lenticular. Sp. 1–5.
    b. Stigmas 3. Seed 3-edged. Sp. 6–7.
  ii. Style simple, continuous. Stigmas 3. Sp. 8–11.
B. Culm simple, nearly naked. Spikes apparently lateral.
  i. Spicules not in a globular head.
    a. Glumes entire, mucronate. Sp. 12–15.
    b. Glumes emarginate, mucronate. Sp. 16–21.
  ii. Spicules united into 1 or more globes. Sp. 22.
C. Culm simple. Panicle leafy. Bristles of Seeds with reversed prickles. Sp. 23–27.
D. Stem branched, leafy. Sp. 28.
Not well known. Sp. 29.

A. *Culm simple, with a single terminal spike. Sheaths leafless.*

i. *Style dilated at base.* HELEOCHARIS.

a. *Stigmas* 2. *Seed lenticular.*

1. **palustris.** Margin of Seed obtuse. Lower Glume short, extending half-way round the spike. Culm subcompressed: sheath horizontally truncate. Root creeping. **p.** 6, 7. *Wet.*

2. **uniglumis.** Margin of Seed obtuse. Lower Glume short, extending all round the spike. Culm round. Root creeping. **p.** 6–8. *Wet.* St. Germain. G. Shores of L. Geneva. England.

3. **ovatus.** Margin of Seed acute. Stigmas 2, remaining. Base of Style triangular, as broad as long. Spike broadly ovate. Glumes very obtuse; lower not larger, embracing half the base of the spike. Culm round, with leafless sheaths. Root fibrous. **a.** 6, 7. *Splashes.* Fr. G. Valley of Po.

4. **atropurpureus.** Seed obovoid, compressed, with acute edges. Remaining Base of Style round, depressed, somewhat saucer-shaped. Glumes very obtuse; lowest not larger, embracing half the base of the spikes. Culm round. Root fibrous. **a.** 7, 8. *Moist sandy.* Between Lausanne and Morges.

5. **carniolicus.** Seed obovate, smooth, compressed, with acute edge. Remaining Base of Style lanceolate, three times as long as broad. Glumes obtuse; lowest not larger, embracing the whole base of the spike. Root fibrous. **a.** 7, 8. *Wet meadows.* Adelsberg in Carn.

b. *Stigmas* 3. *Seed* 3-*edged.*

6. **multicaulis.** Outer Glume subrotund, not longer than the others, embracing whole spike. Culm round, with obliquely truncate somewhat acute sheath. Root fibrous. **p.** 7. *Boggy. Not in Sw., and only in one or two places in G. Not in It.*

7. **acicularis.** Seed finely striped. Outer Glume of Spike larger, acuminate, with a leafless sheath. Culm square. Root creeping. **a.** 6–8. *Splashes.* Eng. *occ.* Fr. *occ.* G. It. *occasionally.*

ii. *Style simple, continuous. Culm round.*

8. **parvulus.** Culm hollow with trans-

verse partition. No Sheaths or L. Stigmas 3. Bristles twice as long as 3-edged seed. **a.** 7, 8. *Moist.* w. shores of Kolmersee. Islands of the Elbe. Spezia. Friuli. Sardinia.

✓ 9. **pauciflorus.** Culm with leafless sheaths. Spike few-flowered, exceeding the blunt, membrane-tipped, outer glume. Stigmas 3. Bristles short. Seed 3-edged. **p.** 6, 7. *Boggy. Rare in It.*

10. **alpinus.** Stoloniferous. Culm somewhat striped. Sheath with a short L. Glume with a thickened boat-like tip, falling short of spike. Bristles 0. **p.** 7, 8. *Very high.* Zermatten. Sw.

✓ 11. **cæspitosus.** Upper Sheath of Culm ending in short L. Outer Glume largest, with a leafy point, nearly equalling spike. Bristles exceeding seed. **p.** 5, 6. *Barren moors. Not in s. It.?*

B. *Culm simple, nearly naked. Spikes apparently lateral.*

i. *Spicules not condensed into a globe.*

a. *Glumes mucronate, entire.*

✓ 12. **setaceus.** Culm and L. setaceous. Spicules 1–3, sessile. Seeds without bristles, striped longitudinally. **a.** 7, 8. *Wet sand or gravel. Not in Sic.*

✓ 13. **Savii.** Culm and L. setaceous. Spicules 1 or 2, sessile. Seeds without bristles, marked with rough dots. **a.** 5–7. *Wet.* s. Eng. It.

β. *Minaæ*, Parl. Culm rooting at base.

✓ 14. **supinus.** Culm terete, naked. Spicules 3–8, crowded, sessile on middle of stem. Seeds without bristles, transversely rugose. **a.** 7, 8. *Wet banks.* Rhine. Berlin. lower Aust. Pdm. Mantua. Versailles.

✓ 15. **mucronatus.** Culm 3-edged, leafless, the top at last bent down. Spicules numerous, crowded, sessile. Larger L. of Invol. refract in fruit. Glumes ovate, obtuse, hardly pointed. Bristles of Seed with reversed prickles. Seed 3-edged, transversely rugose. **p.** 7, 8. *Still water.* Baden. Carin. Carn. Pisa. Mantua. Ferrara. *Moist meadows.* Fr. *rare.* s. Sw. *This seems to have the habit of the following division.*

b. *Glumes mucronate, emarginate.*

✓ 16. **lacustris.** Culm round, with 2 or 3 scariose sheaths at base. Spicules in a terminal panicle. Glumes smooth, fringed, pubescent at top. Seeds 3-edged, smooth. Stigmas 3. Bristles with reversed prickles. **p.** 6–8. *Still water.*

17. **Tabernæmontani** (*glaucus*, Smith). Culm round. Spicules ovate, crowded in a terminal panicle. Glumes with rough dots, fringed. Stigmas 2. Anthers hairless. Seeds obscurely 3-edged, smooth. Bristles with reversed prickles. **p.** 8. *Still water.* Br. Islands. G.

18. **carinatus.** Culm obtusely 3-edged above the middle. Pan. cymose. Outer L. of Invol. erect, channeled, pungent. Glumes smooth, fringed. Stigmas 2. Seeds convex on back. Bristles of Seed with reversed prickles. **p.** 8. *Water.* Thames. Rhine in Ober Baden. L. of Const. Danube. ?

✓ 19. **triqueter.** Stem acutely 3-edged, with 2–3 sheaths and a solitary L. Stigmas 2. Seed smooth, convex. Bristles with reversed prickles. Glume fringed. **p.** 7, 8. *Water.* Fr. *rare.* G. *rare.* Thames. Mantua. Pisa.

20. **littoralis.** Culm acutely 3-edged with 1 or 2 leafy sheaths. Stigmas 2. Seed smooth, convex. Spicules sessile and stalked, in a lateral, twice compound cyme. Bristles feathery with upright hairs. Glumes subdenticulate. **p.** 6, 7. *Marshes on coast* of Mdt.

✓ 21. **Rothii.** Stem acutely 3-edged, with about 2 L. Stigmas 2. Spicules all sessile. Glumes ciliato-lacerate, emarginate, with a straight point. Seeds smooth, convex. (Bristles half or one-third of seed, Koch,) (altogether wanting, Bert.) **p.** 7, 8. *Ditches and pools.* Jersey. Pisa. Teste de Buch. Piave Vecchio.

ii. *Spikelets condensed into a globe.*

22. **Holoschœnus.** Heads 1 or 2, or in a simple umbel. Stigmas 3. Seed hairless, obovoid, 3-edged. Bristles 0. Invol. very long, of 2 very unequal, reflexed, pointed L. L. semiterete, channeled. Culm terete, with 1 or 2 acuminate scales at base. **p.** 6–8. *Moist sandy.* s. and w. Fr. G. *rare.* It.

✓ β. *australis.* Heads small, few, or solitary.

γ. *romanus.* Heads large, nearly solitary.

δ. *globiferus.* Heads proliferous, forming a spurious decompound umbel.

C. *Panicle leafy. L. grass-like. Stem 3-edged.*

✓ 23. **maritimus.** Spikelets few, crowded. Stigmas 3. Bristles of Seeds with reversed prickles. Glumes with sharp teeth; (the middle Tooth awned, Bert.) L. of Invol. flat.

Glumes torn, with an intermediate point. **p.** 7, 8. *Ditches* on the Coast.

✓ 24. **sylvaticus.** Spikelets very numerous, in small clusters, stalked, and sessile in a lax, decompound panicle. Stalks sheathed. Stigmas 3. Bristles of Seeds with reversed prickles. Glumes obtuse, mucronulate. L. of Invol. flat. **p.** 6, 7. *Wet shady.* n. Eng. and as far s. as Tuscany.

✓ 25. **radicans.** Spicules all stalked, in a decompound corymb. Stigmas 3. Bristles of Seed twisted, smooth, three times as long as seed. Glumes, obtuse, pointless. **p.** 7, 8. *Moist sandy meadows.* s. and e. G. *rare.*

26. **pubescens.** Invol. of 2 L., about equalling spicule. Spicules few, pubescent, ovate, crowded in a spurious umbel. Stigma trifid. Bristles of Seed 0. Glumes ovate, awned. Seeds globose, retuse. **p.** 6. *Near the sea.* Ajaccio.

✓ 27. **michelianus.** Invol. of many L., many times longer than spicules. Spicules in a sessile, terminal head. Stigmas 2. Bristles 0. Glume lanceolate, tapering into a spreading mucro. Seeds nearly linear, acute. **a.** 7, 8. *Moist sandy and banks of streams.* Elbe. Morav. Po. 7–9. Rous. Pdm. Aust. Sil.

D. *Stems branched, leafy. Flowers solitary, on axillary stalks.*

28. **fluitans.** Stems rooting at base, prostrate or floating. Stigmas 2. Bristles 0. **p.** 6–9. *Wet.*

The following I do not know where to place.

29. **panormitanus.** Spicule solitary, very small, sessile. Invol. of 2 L.: the lower exceeding the spicule; the upper resembling a very long continuation of the stem. Glume ovate, mucronulate, concavo-carinate, hispid on the back. Stem creeping, terete at base; upper part semiterete, with rough angles. L. many, rigid, semiterete, channeled, rough on the margin. **p.** 7. *Marshes.* St. Ciro near Pal."—Parl.

831. FIMBRISTYLIS.

1. **dichotoma.** Culm 3-edged. L. setaceous, pubescent. Spicules stalked, solitary, in a spurious umbel; central one sessile. Seeds with longitudinal ribs and transverse wrinkles. Glumes ovate, mucronate. **a.** 6–8. *Moist.* s. Tyr. Tess. It.

β. *annua.* Umbel simple, with about 5 spicules.

γ cioniana

832. POGONOSTYLIS.

1. **squamosa.** *Very small, tufted.* Spicules solitary, sessile and stalked, in an irregular umbel. Invol. of 5 L., falling short of umbel. **a.** 6. *Ditches and moist grass.* Altopascio and Poggio a Cujano, Tusc.

833. ERIOPHORUM.

A. *Spike solitary, terminal.*

1. **alpinum.** Stem 3-edged. L. much shorter than their sheaths.. Spike oblong. Bristles 4–6, lengthening into flexuose hairs. **p.** 6, 7. *Boggy mountains* of m. Eur. and on *plain*, n. G. ✓

2. **capitatum.** Stem altogether round, with an inflated sheath. Spike globular. Hairs very numerous. Root extensively creeping. **p.** 6, 7. *Very high moist.* Pyr. Alps. Sc. ✓

3. **vaginatum.** Stem 3-edged at top, with an inflated sheath, somewhat oblong. Hairs very numerous. Root hardly creeping, *densely tufted.* **p.** 3–5. *Bogs.* ✓

B. *Spikes several. Hairs of Seeds very numerous.*

4. **pubescens.** Stem 3-edged at top. L. (lanceolate, Sm.) linear, flat, triangular at top. Spike-stalks rough. Seeds 3-edged, pyriform. Hairs about three times as long as spikes. **p.** 4, 5. *Boggy meadows.* ✓

5. **gracile.** Stem round, with 3 slight angles. L. very narrow, 3-edged, channeled at base. Spike-stalk finely downy. Seeds oblongo-linear, 3-edged, somewhat narrowed at base. Hairs about twice as long as spikes. **p.** 7. *Very wet bogs.* Sc. e. G. e. Liguria. Mont Cenis. ✓

6. **angustifolium.** Stem nearly round. L. linear, channeled, 3-edged at top. Spike-stalk smooth. Hairs four times as long as spike. Seeds all acutely 3-edged. **p.** 4. *Bogs.* ✓

834. ELYNA.

1. **spicata.** Spike solitary, simple, terete. **p.** 6, 7. *Very high.* Alps. Pyr. ✓

835. KOBRESIA.

1. **caricina.** Spike subovoid, compound, compact. Spicules tiled, alternate. **p.** 8. *Springy.* Teesdale. Perthsh. Glaciers of Aar and Rhone. e. Alps. ✓

836. CAREX.

- **A.** Flowers in a simple spike.
  - **i.** Stigmas 2.
    - **a.** Spike diœcious. Sp. 1, 2.
    - **b.** Spike complete. Sp. 3–6.
  - **ii.** Stigmas 3. Sp. 7–11.
- **B.** Spikes in an involucred head! Sp. 12, 13.
- **C.** Spike compound.
  - **i.** Stigmas 3. Sp. 14.
  - **ii.** Stigmas 2.
    - **a.** Barren Flowers at the top of each spicule.
      - * Root not creeping. Sp. 15–20.
      - ** Root creeping.
        - † Beak round, obliquely truncate. Sp. 21, 22.
        - †† Beak compressed, bidentate. Sp. 23–27.
    - **b.** Arrangement of Flowers irregular. Sp. 28–33.
    - **c.** Barren Flowers at base of each spicule.
      - * Root creeping. Sp. 34–37.
      - ** Root fibrous, tufted.
        - † Beak bidentate. Sp. 38–43.
        - †† Beak nearly entire or wanting. Sp. 44–49.
- **D.** Spikes distinct, all complete. Barren Flowers at top. Sp. 50, 51.
- **E.** Spikes separate; terminal complete; barren at base; lateral fertile. Sp. 52–57.
- **F.** Catkins separate; upper barren. Stigmas 2.
  - **i.** Fruit terminating in a flattened and margined beak. Sp. 58–60.
  - **ii.** Beak round, and short or wanting.
    - **a.** Barren spike solitary (rarely 2).
      - * Beak ending in 2 teeth. Sp. 61, 62.
      - ** Mouth entire, or splitting on one side. Sp. 63–67.
    - **b.** Barren Spikes 2 or more.
      - * No fertile Flowers at base of barren spikes. Sp. 68–72.
      - ** Fertile Flowers at base of barren spikes. Sp. 73.
- **G.** Catkins separate; upper barren. Stigmas 3. Barren Spike solitary.
  - **i.** Beak short, membranous, or wanting.
    - **a.** Spikes nearly sessile.
      - * Spikes approximate at top of culm. Sp. 74–85.
      - ** Catkins disposed along the culm. Sp. 86.
    - **b.** Spikes corymbose.
      - * Fruit smooth. Beak 0. Sp. 87–90.
      - ** Fruit smooth. Beak round, membranous. Sp. 91–94.
      - *** Fruit hairy. Bracts membranous. Sp. 95–96.
    - **c.** Spikes racemose along culm.
      - * Very long and slender. Sp. 97–100.
      - ** Rather lax, but not very long. 101–104.
  - **ii.** Fruit with a plano-convex, bidentate beak.
    - **a.** Spikes almost all on slender stalks, confined to upper part of culm. Sp. 105–107.
    - **b.** Spikes approximate, nearly sessile near top of culm. Sp. 108–111.
    - **c.** Spikes racemose along culm.
      - * Fruit smooth, except on margin. Lower Stalks hardly half exsert. Sp. 112–117.
      - ** Fruit smooth, except on margin. Lower Stalks more than half exsert. Sp. 118–121.
      - *** Fruit rough. Sp. 122.
  - **iii.** Fruit beaked; but the mouth small, membranous, and uncertain in its form. Sp. 123–126.
- **H.** Barren Spikes more than one.
  - **i.** Beak none. Sp. 127–129.
  - **ii.** Beak membranous. Sp. 130–132.
  - **iii.** Break firm, bidentate.
    - **a.** Fruit hairy. Sp. 133–135.
    - **b.** Fruit without hairs. Sp. 136–141.

A. *Catkin solitary.*

i. *Stigmas 2.*

a. *Spike diœcious.*

1. **dioica.** Fr. nearly erect, many-nerved. Culm and L. smooth. **p.** 6, 7. *Bogs. occ.* n. and m. Europe. ✓

2. **davalliana.** Fr. deflexed, ribbed. Culm ✓

and L. rough. **p.** 6. *Bogs. rare.* n. and m. Europe.

b. *Spike complete.*

3. **pulicaris.** Barren Fl. at top. Fr. stalked, deflexed, nerveless, lanceolate, not acuminate. Glumes deciduous. **p.** 6. *Boggy.* n. Eur. *rare in* Sw.

4. **decipiens.** Barren Fl. at top. Fr. stalked, deflexed, nerveless, tapering into a long beak. Root fibrous, tufted. **p.** 7, 8. *High pastures.* Pyr.—Gay.

5. **capitata.** Barren Fl. at top. Fr. crowded, subrotundo-elliptic, acuminate, compressed, nerveless, quite smooth, exceeding persistent glume. **p.** 5, 6. *Boggy meadows.* Bav. upper Swab. Tyrol.

6. **Suteri.** Stigmas 2? Barren Fl. above and below. Fr. round, with a long beak, hirsute. L. flat, *a line broad,* soft. Spike ovate. **p.** Sw.—Kunth. *A doubtful plant.*

ii. *Stigmas* 3. *Barren Flowers at top.*

7. **rupestris.** Catkin many-flowered. Fr. elliptic, about twice as long as broad, nerved, erect, shorter than obtuse glumes. L. linear, flat. Root creeping. **p.** 7, 8. *Very high grassy rocks.* Vall. Tyrol.

8. **pyrenaica.** Catkin many-flowered. Fr. lanceolate, about three times as long as broad, nerveless, spreading, stalked. Glumes deciduous. Plant tufted. **p.** 8, 9. *Very high.* Pyrenees.

9. **obtusata.** "Fr. shining, ovoid or elliptic, with a round, smooth, cloven, pale-pointed beak, exceeding the glume. L. flat, rough. Root creeping. **p.** 4, 5. *Boggy meadows* at Gutenberg not far from Halle on the Saale, and at Bienitz near Leipzig."—Koch.

10. **pauciflora.** Fl. about 4; the barren one at top. Fr. reflexed, lanceolate, beaked, nerveless, exceeding deciduous glumes. **p.** 6, 7. *Bogs. rare.* n. and m. Eur.

11. **microglochin.** A strong exsert Awn from the base of the Nectary! Fl. about 6 of each sort. Fr. lanceolato-subulate. **p.** 5; or 7, 8 *on mountains.* Bav. Vall.

B. *Catkins united into an involucred head!*

12. **cyperoides.** Stigmas 2. Barren Fl. at base of each spicule. Fr. tapering into a very long beak. **p.** 8, 9. *Borders of lakes and marshes.* e. Ger.

13. **baldensis.** Stigmas 3. Barren Fl. at top of each spicule. Fr. oval. Beak hardly any. **p.** 5, 6. *Beds of torrents.* Monte Baldo. s. Tyr.

C. *Spike compound, complete. No Involucre. Each Spicule is complete, except in subdivision* **b.**

i. *Stigmas* 3. *Barren Flowers at top of each spicule.*

14. **curvula.** Spicules crowded into a dense head. Fr. ovate, tapering into a 2-lobed, membranous beak. Root fibrous, closely tufted. **p.** 7, 8. *High grassy.* e. Alps.

ii. *Stigmas* 2.

a. *Barren Flowers at top of each spicule.*

* *Root not creeping; i. e. the new shoots come up close to the parent plant.*

15. **vulpina.** Spike dense, supradecompound. Fr. squarrose, ovate, tapering into a cloven beak, with about 7 distinct nerves on the convex face. Glumes shorter than fruit. **p.** 6. *Sides of ditches.*

β. *nemorosa,* Willd. Fr. elliptic.

16. **muricata.** Spike somewhat decompound. Spicules approximate. Fr. squarrose, hardly nerved, ovate, tapering into a cloven beak. Angles of Culm rough. **p.** 6. *Meadows and banks.*

β. *virens,* Koch. Spike longer and more lax. Glumes pale. Fr. green.

17. **divulsa.** Lower Spicules remote. Fr. nearly erect, hardly nerved, ovate, tapering into a cloven beak. Culm rough at the top. Root fibrous, compact. **p.** 6. *Woods and shady banks.*

β. *guestphalica,* Koch. More slender in all its parts.

18. **teretiuscula.** Spicules crowded. Fr. subcrect, 4-nerved on the convex side, ovate, tapering into bidentate beak. Faces at the top of the Culm convex. **p.** 6. *Boggy meadows.* m. Eur. *Root slightly creeping, so as to separate the culms.*

19. **paradoxa.** Pan. contracted. Fr. broadly ovate, with 9–11 strong nerves on the convex side. Beak somewhat abrupt, bidentate. Faces of the Culm convex. Root densely tufted. **p.** 7. *Boggy meadows.* m. Eur.

20. **paniculata.** Panicled. Fr. ovate, tapering rather abruptly into a bidentate beak. Nerves slightly marked. Faces of the Culm

flat. *Forms very large tufts.* **p.** 6. *Boggy shade.*

** *Root creeping.*

† *Beak round, obliquely truncate.*

✓ 21. **incurva.** Spikes forming a compact, roundish head, bracteate. Glumes ovate, acute, slightly mucronate. Culm curved, smooth. Fr. nerveless. **p.** 6. *High micaceous* Alps. *Sandy shores*, Sc.

✓ 22. **fœtida.** Spikes in a compact head. Fr. acuminate, 3-edged. Beak slightly winged, rough on the margin. Culm rough on the angles from the base. **p.** 7, 8. *High moist.* m. and w. Alps.

†† *Beak flattened, ending in 2 teeth.*

23. **stenophylla.** Spikes in an ovoid or oblong head. Fr. plano-convex, acuminate. Beak rough on the edge. Nerves of Glume evanescent. Culm smooth at base. **p.** 4. *Grassy hills.* Boh. Mor. lower Aust.

✓ 24. **chordorhiza.** Spikes in a compact head. Fr. gibbous, many-nerved, tapering abruptly into a short, cloven, smooth, somewhat membranous beak. Culm smooth, much exceeding L. **p.** 5, 6. *Deep bogs.* n. Ger. Palat. *rare.* Sw.

✓ 25. **divisa.** Spike compound, rather compact. Fr. gibbous, many-nerved, contracting abruptly into a short beak. Glume as long as fruit: nerve excurrent. Stem roughish at top. Root widely creeping. **p.** 5, 6. *Moist pastures. occ.*

26. **lobata.** Spike compound, ovoid. Fr. nerved. Glumes ovate, acute, pointless. **p.** Alps of Prov. and Pdm.—Schkuhr. *Considered by Gay as a var. of* C. divisa.

27. **schœnoides.** Spike compound, short. Fr. elliptic, gibbous, faintly nerved, tapering into a short, smooth beak. Glume as long as fruit: nerve excurrent. **p.** 5. *Grassy hills.* lower Aust.

b. *Arrangement of barren and fertile flowers irregular.*

28. **repens.** Lower Spicules fertile, rather remote; middle barren at top; upper barren, crowded. Glumes of fertile Spicules 1-nerved. Fr. acuminate, cloven, gibbous, rough on margin. **p.** 5, 6. Pavia. Pdm.

29. **modesta.** "Lower Spicules fertile; upper barren; lowermost bracteate. Glume ovato-oblong; barren diandrous. Fr. ovato-oblong, margined, acuminate into a bidentate beak. Rhizoma short and thick. **p.** 5, 6. *Marsh* between Pirou and Criance in lower Normandy. *Differs from* C. arenaria *by the number of stamens, by its habit and its station in damp meadows, and by the rather obtuse glumes.*"—Gay.

✓ 30. **arenaria.** Root far creeping. L. smooth. Lower Spicules fertile; middle barren at top; upper barren. Glumes 7-nerved, acuminate. Fr. ovate, acuminate: the acumen with finely serrate wings. **p.** 6. *Sand.*

✓ 31. **intermedia.** Root creeping. Upper and lower Spicules fertile; middle barren. Glumes shorter than fruit. Nerve evanescent. Fr. elliptic, acuminate, with an obscure serrulate margin. **p.** 6. *Marshy meadows.*

32. **ludibunda.** "Root tufted. Spike contracted, compound at base, simple and exclusively barren at top; a short bract at the base. Spicules mostly unisexual. Glumes very obtuse, pointless. Fr. plano-convex, nerveless, ovate, attenuate into a nearly entire beak. **p.** 5, 6. *Bog* des Rosières near Pirou in lower Normandy. *The arrangement of flowers resembles that of* C. arenaria; *in habit and mode of growth it is like* C. paniculata."—Gay.

33. **microstyla.** Root fibrous. Barren and fertile Fl. variously intermingled. Glumes ovate, acute, equalling fruit. Fr. small (a line long), compressed, conical, rough at top, cloven. Nut nearly round.—Gaud. **p.** 6–8. *High pastures.* mid. Alps. *very rare.*

c. *Barren Flowers at base of each spicule.*

* *Root far creeping. Fruit serrulato-ciliate.*

✓ 34. **brizoides.** Spicules about 5, curved, approximate, all complete. Fr. erect, plano-convex, lanceolate, serrulato-ciliate from base; tapering into a cloven beak, as long as glume. *Spikes pale.* **p.** 5, 6. *Grassy shade.* G. *occasionally.*

35. **ohmülleriana.** "Spike compound, somewhat 2-rowed at top. Spicules 8–12, 4 or 6 of the upper barren at top, approximate, lanceolate, at last frequently curved; lower remote, oblongo-obovate, barren at base; lowest with a leafy bract. Fr. half as long as glume, acuminate into a plano-convex, cloven beak. Margin serrulato-ciliate almost from base. **p.** 5, 6. *Moist meadows.* Rothenbach in Bav."—Koch.

36. **ligerica.** "Spicules 4–12; lower somewhat bracteate. Fr. stalked, elliptic, plano-convex, nerved on both sides. Margin serrulato-ciliate from bottom to top, tapering into a long, bidentate beak. Glumes ovato-lanceolate, acuminate. L. rough on the upper surface. **p.** *Sandy.* Banks of Loire."—GAY.

37. **Schreberi.** Spicules about 5, crowded, straight. Fr. erect, as long as glume, oblongo-ovate, serrulato-ciliate nearly from base, tapering to a cloven wingless point. L. smooth. *Spicules brown.* **p.** 5, 6. *Sandy pastures. occ.*

** *Root fibrous, tufted.*

† *Beak of Fruit bidentate.*

38. **ovalis.** Spicules about 6, broadly oval, contiguous, exceeding bracts. Fr. erect, elliptico-ovate, gibbous, striate externally, acuminate. Margin of Beak serrulate. *Spicules brown.* **p.** 7. *Moist meadows.*

β. argyroglochin, HORNEMANN. *Spikes pale.*

39. **Grypos.** Spicules about 3, obovate, approximate. Fr. erect, ovate, twice as long as glume, acuminate into a rough beak. Bracts shorter than spike. **p.** 7, 8. Alps above Zermatten in the Vallais. *Probably a form of* C. stellulata.

40. **stellulata.** Spicules about 4, roundish, rather distant. Fr. squarrose, gibbous, striate externally, acuminate. Edges of Beak serrulate. Bracts shorter than spicule. **p.** 5, 6. *Boggy.*

41. **remota.** Upper Spicules approximate; lower remote: all simple. Fr. gibbous, ovate, acuminate. Nearly all the Bracts exceeding spicules. **p.** 6. *Moist.*

42. **axillaris.** Upper Spicules approximate, simple; lower compound, distant, compact. Fr. ovate or elliptic, gibbous, tapering into a rough beak, exceeding glumes. Upper Bracts short; lower exceeding spicules. **p.** 6. *Marshy.* Eng. Westph. *occ.*

43. **boenninghauseniana.** Upper Spicules approximate, simple; lower compound, distant, forming a rather lengthened spike. Fr. lanceolate, gibbous, serrulate from below the middle, tapering into beak, not exceeding glumes. Upper Bracts short; lower exceeding spicule. **p.** 7. *Moist meadows.* Westph. Eng. *rare. The English specimens of this and the preceding have barren Fl. at the top of the spicule. Query if this is the case with the foreign plant?*

†† *Beak of Fruit nearly entire, or splitting only on one side* (*wanting in* C. loliacea).

44. **elongata.** Spicules numerous, approximate. Fr. spreading, elliptico-lanceolate, 3-edged, many-ribbed. Edges of Beak rough. Nut lineari-oblong. Bracts very short, or none. **p.** 6. *Marshy.* n. Eur. *occ.*

β. Gebhardi, WILLD. Spike very short.

45. **lagopina.** Spicules 3–4, roundish, contiguous. Fr. erect, ovate, gibbous, with a short, smooth beak. Nut elliptic. Glumes ovate, nearly equalling fruit. Culm smooth. **p.** 7, 8. *High granitic pastures.* Sc. e. Alps.

46. **Heleonastes.** Spicules 3–4, roundish, approximate. Fr. elliptico-ovate, 3-edged, tapering into a very short, entire beak (*in my specimens this is split on one side, as in the next species*). Glumes nearly equalling fruit. Culm rough. **p.** 5. *Boggy meadows.* Salzb. Munich.

47. **Persoonii.** "Spicules 4–8, ovate or oblong. Fr. erect, ovate, faintly striate. Beak short, split to its base on one side, rough at the edges. Glumes ovate, brown with a white margin, shorter than fruit. **p.** 7, 8. *Mountain bogs.* Sc."—BAB. Alps.

48. **curta.** Spicules 6, elliptic, approximate. Fr. erect, ovate, acute, faintly striate. Hardly any beak. Glumes ovate, shorter than fruit. Culm smooth at base. **p.** 5, 6. *Boggy meadows.*

49. **loliacea.** Spicules about 4, rather remote, roundish. Fl. elliptic, without a beak, closely ribbed. Mouth entire. **p.** 5. *Boggy meadows, among bushes.* Bourtanger Moor in Westph.

D. *Spikes distinct; all complete. Barren flowers at top.*

50. **Linkii.** Spikes 2, distant, lax. Fr. elliptic. Beak short, membranous at top, truncate. Lower Spike with a long, leafy bract. **p.** 4, 5. *Banks.* It.

51. **sarda.** Spikes 2. Stalks distant, lax. Fr. somewhat bicuspidate. Glumes leafy. Sheath broad, leafy. **p.** Sard. "*A præcedente differt valvis subfoliaceis, linearibus, angustissimis, longissimè acutatis,*" KUNTH; *but the glumes of* C. Linkii *are leafy in the middle.*

E. *Terminal Spike complete. Barren flowers at base. Lateral Spikes fertile.*

52. **Buxbaumii.** Spikes 3–4: lateral nearly sessile. Stigmas 3. Fr. (elliptic, KOCH;

obovate, J. W.; oval, C. C. B.) smooth, nerved, 3-edged, with 2 minute teeth. Glume cuspidate. Sheaths of L. dividing into net-like filaments. **p.** 7. *Boggy meadows.* G. Irel. *very rare.*

✓ 53. **nigra.** Spikes 3–4, ovate; lateral nearly sessile. Stigmas 3. Fr. obovate, smooth, without nerves, 3-edged, ending in 2 minute teeth, smooth. Culm smooth. **p.** 7, 8. *Dry grassy mountains.* Sw. e. Alps.

✓ 54. **Vahlii.** Spikes 1–4, roundish: lateral nearly sessile, contiguous. Stigmas 3. Fr. elliptic, rough with a short, toothed beak, exceeding the acute *dark* glumes. **p.** 7. *High.* Clova. Val Bevers in Sw.

✓ 55. **aterrima.** Spikes 3–5, oblongo-eylindrical, erect: lower on long stalks. Stigmas 3. Fr. ovate, ending abruptly in a short beak, with 2 teeth. Culm rough. **p.** 8. *Very high grassy.* w. and e. Alps.

✓ 56. **atrata.** Spikes 3–5, oblong: lower on long stalks, drooping when in fruit. Stigmas 3. Fr. (ovate, Koch; obovate, J. W.) ending abruptly in a short, bidentate beak. Culm smooth. **p.** 6–8. *Dry stony.* Alps. Riesengeb.

✓ 57. **bicolor.** Spikes stalked: 3 of them crowded at top of culm; 1 remote on a longer stalk. Stigmas 2. Fr. elliptic, gibbous, 3-nerved on the back. Beak 0. Glumes ovate, obtuse. **p.** 7, 8. *Very high granitic.* Sw. and e. Alps.

F. *Spikes separate; the upper barren. Stigmas* 2.

i. *Fruit with a flattened and margined beak.*

✓ 58. **mucronata.** Fr. downy, attenuate and acuminate into a membrane-pointed beak. Fertile Spikes 1–2, approximate, roundish. Bracts sheathing; lowermost leafy. L. setaceous, channeled. **p.** 7, 8. *Stony mountains.* Sw. and e. Alps.

59. **gaudiniana.** Fr. hairless, tapering into a serrulate, bidentate beak. Barren Spike often with fertile flowers intermixed. Fertile Spikes 1–2, ovate, approximate, few-flowered. Bracts membranous, without a sheath. L. setaceous, channeled, somewhat 3-edged. **p.** 6, 7. *Boggy mountains.* Thun. Bregenz. Tyrol. *rare. According to Gay, this is not different from* C. microstachya.

✓ 60. **microstachya.** Fr. hairless, ovate, tapering into a small, bidentate beak. Barren Spike often with fertile flowers intermixed. Fertile Spikes 2–4, sessile, short and crowded. Bracts membranous, without sheath. L. linear, flat. **p.** 6. *Boggy meadows.* n. G. Sil. *rare.*

ii. *Beak round, short and smooth; or wanting. Fruit hairless. Bracts not sheathing.*

a. *Barren Spike almost always solitary.*

* *Beak ending in two teeth.*

✓ 61. **saxatilis.** Fertile Spike ovate. Fr. nerveless, ovate, inflated. Glumes subobtuse, dark purple-brown, tipped with white. **p.** 6. *High moist.* Sc.

62. **Grahami.** "Barren Spikes 1 or 2, slender; fertile 2–3, ovate, obtuse; lower one stalked, bracteate, sheathless. Fr. oblongo-ovate, nerved, inflated. Glumes acute: tip and midrib pale. **p.** 7. Glen Phu, Clova."—Bab.

** *Mouth entire; or splitting only on one side.*

63. **intricata.** "Fertile Spikes about 3, erect, slender; lowest remote, on a long stalk; uppermost sessile. Fr. ovato-lanceolate, subplano-convex, not inflated, smooth, nerveless. Margin finely puberulo-serrulate. Beak bidentate. Glumes oblong, obtuse, narrower and longer than fruit. L. flat. Root fibrous. **p.** 5. *Shady hills.* Boschi di S. Fratello."—Guss. *Compared by Guss. to* C. panicea; *but the two stigmas, and want of sheaths to the bracts, leave no doubt of its place here. He describes the fertile spikes as slender,* "more than 6 lines long." *Is this a misprint? Half an inch is a short spike for any of the section.*

✓ 64. **vulgaris.** Spikes oblong. Fr. elliptic, many-nerved at base, quite smooth. Bracts with 2 short ears. L. erect, the sheaths not filamentous. **p.** 5, 6. *Moist meadows.*

65. **Gibsoni.** "Spikes erect: barren single; fertile 2–4, narrowest downwards, slightly stalked. Bracts with short auricles, leaf-like. Fr. lanceolate, acute, with many nerves and a short entire beak. Nut broadly obovate, very blunt, with a short thick beak. Stem acutely 3-edged, rough at top. Tunic nearly twice as long as seed. **p.** 6. Hebden Bridge in Yorkshire."—Bab.

✓ 66. **rigida.** Fr. nerveless, elliptic, gibbous. Beak entire. Barren Spike solitary. L. broad, flat, recurved (edges deflexed, Bab.); their Sheaths entire. **p.** 6–8. *High rocks and stony.*

67. **pacifica** (*cæspitosa*, Linn., *according to Bab.*). "Spikes erect, approximate; barren solitary. Bracts with long auricles: lowest alone slender, leaf-like, short. Fr. elliptic,

acute, lenticular, not nerved, somewhat spreading, with a short, entire beak. Sheaths of L. with a slight web. Glume lanceolate, *dark purple*. **p.** 5. Br."—Bab.

b. *Barren Spikes more than one.*

* *Without fertile flowers at base.*

68. **aquatilis.** "Spikes erect, barren, 1 or more: fertile 3 or 4, elongated, narrowed below; lower ones stalked. Bracts leaf-like, erect, exceeding stem. Fr. elliptic, lenticular, without nerves, broader than glume. Stem 3-edged, smooth. Root tufted. Sheaths of L. not filamentous. **p.** 7. Clova."—Bab.

✓ 69. **trinervis.** Spikes oblong. Fr. oval, subacute, with 4 or 5 complete nerves on back and 3 on the inner face. Bracts of all the fertile Spikes extending beyond the barren spikes. L. keeled. Root stoloniferous. **p.** 5, 6. *Sandy shores.* w. Fr.

✓ 70. **stricta.** Spikes cylindrical; the fertile often tipped with barren florets. Fr. obovate, with many nerves. Lowermost Bract short and slender. Sheaths of L. filamentous. **p.** 6. *Marshes. There is sometimes only one barren spike; and we find also a plant with filamentous sheaths to L., with only one barren spike, and oblong fertile spikes, not tipped with barren florets, usually put with this, but which seems to me rather a form of* C. vulgaris.

71. **panormitana.** "All Spikes long linear; barren 2 or 3; fertile 3 or 4; latter somewhat nodding in fruit: lower remote, somewhat stalked; upper sessile. Bracts leafy, without sheaths. Fr. smooth, elliptic, convex on back, obsoletely nerved, terminating in a very short and smooth, subbidentate beak. Lower part of Spike closely tiled. Glumes lanceolate, acute, hardly as long as fruit. L. flat. Root fibrous. **p.** 4. *Banks of streams.* Pal." —Guss.

72. **acuta.** Fr. elliptic, nerved, gibbous. Barren Spikes 1–3; fertile 3–4, cylindrical, slender, often attenuate, and lax at base. Lowermost Bract leafy, with long auricles. Sheaths of L. not reticulate. Culm rough at top. **p.** 6. *Water.*

** *Barren Spikes with fertile flowers at base.*

73. **mœnchiana.** Fertile Spikes erect, acute, on short stalks. Fr. smooth, ovate, obtuse, shorter than lanceolate, acute glume. Root creeping. Lower Bracts long. **p.** 5. Devil's ditches at Marburg in Hesse.—Rchb.

G. *Spikes separate; upper barren, solitary. Stigmas* 3.

i. *Beak short, membranous, or wanting.*

a. *Spikes nearly sessile. (A long-stalked Spike is occasionally met with, from the root, or lower part of the stem, in some species.)*

* *Spikes approximate near top of culm.*

✓ 74. **supina.** Fr. elliptic, without nerves or hairs. Beak long, truncate. Fertile Spikes ovate. Root stoloniferous. **p.** 4, 5. *Open hills.* n. and e. G.

75. **platystachya.** Fr. elliptic, few-nerved, downy. Beak long, membranous. Fertile Spikes 1–3; stalks included in the membranous sheaths of the leafy bracts. L. channeled, not keeled. **p.** *Mountains.* Apenn.

76. **macrolepis.** "Fertile Spikes 2; upper sessile, close to the barren spike; lower on a short stalk, shorter than its leafy bract. Glumes large, scariose, emarginate, mucronate; those of barren Spike obtuse, with a white border. Fr. oblong, 3-edged." Apenn. *Between* C. clandestina *and* C. ericetorum.—Kunth, *from* DC.

✓ 77. **gynobasis.** Fr. elliptico-obovate, with small bidentate beak, striate. Fertile Spikes 1–3, about 5-flowered; upper approximate; lowest on a long stalk from base of culm. Scales of fertile Catkins hardly or not at all cuspidate. **p.** 3, 4. *Grassy hills.* s. Sw. It.

78. **basilaris.** Fr. elliptico-obovate, with a short bidentate beak, hardly nerved. Fertile Spikes 2–4, of 15–20 flowers; 1, or rarely 2, near the barren spike, others on long stalks from the base of the culm. Scales of fertile Spikes with a strong cusp. **p.** 4. *Damp.* Cape la Croisette near Cannes.—Jordan.

79. **Grioletti.** Fr. obovate, with 2 smooth teeth. Fertile Spikes about 4, erect; upper sessile; lowermost distant, on a long stalk. Bracts leafy. Sheaths membranous, short; upper without sheath. **p.** Pegli in Liguria. *Kunth thinks it a var. of* C. tomentosa.

✓ 80. **tomentosa.** Fr. obovate. Beak inconspicuous. Bracts leafy, with short, membranous sheaths. Fertile Spikes 2, nearly sessile. Root with long stolons. **p.** 6. *Moist meadows.* G. and Fr. *occ.*

β. thuringiaca, Schk.? Lateral Spikes tipped with male flowers.

✓ 81. **præcox.** Fr. elliptic, minutely emarginate. Fertile Spikes 1–3; upper sessile. Stalks all included. Bracts leafy. Sheaths membranous, very short. Root stoloniferous. **p.** 3, 4. *Dry pastures.*

β. *mollis.* Glumes emarginate, with a long mucro.

γ. *refracta.* Culm suddenly bent above first spike.

✓ 82. **ericetorum.** Fruit somewhat pear-shaped, ending in 2 minute teeth. Bracts membranous. Sheaths short. Spikes nearly sessile. (Glumes obovate, Koch.) **p.** 4, 5. *Dry sandy.* Sw. G. *occ.*

β. *membranacea.* Glumes more oblong.

✓ 83. **polyrrhiza.** "Barren Spike solitary; fertile 1 or 2, approximate, oblongo-ovate, sessile; the lowest somewhat stalked. Bracts membranous on margin, amplexicaul; the lowest sheathing. Fr. oblong, 3-edged, with a short subemarginate beak. Glume mucronate with the excurrent nerve. Stem erect. Root fibrous, densely tufted. **p.** 5. *Woods.* s. and m. G. *occ.*"—Koch. Lorraine. *The description does not distinguish this from* montana.

✓ 84. **montana.** Fr. subpyriform. Beak emarginate. Bracts membranous, often with a somewhat leafy point. Sheaths 0. Spikes sessile. L. retrorso-ciliate in lower part! Root fibrous, densely tufted. **p.** 5, 6. *Shade.* m. Europe.

✓ 85. **pilulifera.** Fr. roundish, stalked. Beak truncate. Bracts leafy, auricled, membranous. Sheaths 0. Spikes sessile. Root fibrous, tufted. **p.** 5, 6. *Heaths.*

** *Spikes nearly sessile, disposed along the culm.*

✓ 86. **humilis.** Fruit obovate, somewhat stalked, with a very short, truncate beak. Fertile Spikes remote, slender, about 3-flowered, almost included in the membranous, leafless sheath. **p.** 3, 4. *Limestone hills. occ.*

b. *Spikes corymbose.*

* *Fruit smooth. No Beak.*

87. **rariflora.** Fruit elliptic, attenuate, slightly 3-edged, not nerved. Fertile Spikes 2–3, oblong, few-flowered. Sheaths short, membranous. Root creeping. **p.** 6. *High boggy.* Sc.

88. **irrigua.** Fr. roundish, without nerves, 3-edged: mouth entire. Fertile Spikes 2–3, oblong, dense, with occasionally a few barren flowers at base. L. flat; edges smooth, except at top. Root creeping. **p.** 6, 7. *Bogs.* Northumb. Sc. Alps.

89. **limosa.** Fruit elliptic, 5–7-nerved on back: mouth nearly entire. Fertile Spikes 1–2, ovate, dense, with occasionally a few barren flowers at base. L. complicato-canaliculate, rough at the edge. Root creeping. **p.** 6. *Bogs.* ✓

90. **pallescens.** Fertile Spikes 2–3, nodding, on exsert stalks; the upper nearly sessile. Sheaths leafy. Fr. oval, finely striate, *green. Glumes pale.* Root tufted. **p.** 6. *Clayey woods.* ✓

** *Fruit smooth. Beak round and membranous.*

91. **capillaris.** Fertile Spikes lax, on slender stalks, 2 or 3 of which are from the upper sheath! Fr. obovate. All Bracts leafy. Root fibrous. **p.** 6, 7. *High moist stony.* Sc. Alps. Rieseng. ✓

92. **ustulata.** Fertile Spikes ovate, compact, all stalked, drooping. Fr. elliptic. Sheaths short, membranous; lower leafy. Root fibrous. **p.** 7, 8. *High boggy.* e. Alps. Ben Lawers. ✓

93. **nitida.** Fertile Spikes oblong; upper nearly sessile, dense, 12-flowered. Sheaths short, membranous; lower with a leafy point. Root stoloniferous. **p.** 4, 5. *Barren hills.* Aust. Carn. Tyrol. Vall. ✓

94. **alba.** Fertile Spikes 2, stalked, about 5-flowered. Sheaths leafless. Beak small, round, membranous. **p.** 4, 5. *Woody hills.* Alps. ✓

*** *Fruit hairy. Bracts membranous.*

95. **digitata.** Fr. elliptic, stalked, equalling glume. Fertile Spikes about 3, linear, rather remote. Stalks included in the membranous, leafless sheath. **p.** 3, 4. *Shade.* Fr. G. It. ✓

96. **ornithopoda.** Fr. elliptic, exceeding glume. Fertile Spikes approximate, lax, linear. Stalks included within a membranous, leafless sheath. Beak, I believe, at first entire, but afterwards frequently splitting on one side, and sometimes down both, by the expansion of the style. **p.** 4, 5. *Shady woods.* G. Fr. *rare.* ✓

c. *Spikes racemose along the culm.*

* *Very long and slender.*

97. **pilosa.** Spike few- (5–10)-flowered. ✓

Beak obliquely truncate, with 2, small, membranous teeth. Stalks exsert. Bracts leafy. L. fringed with hairs. **p.** 4, 5. *Woody hills.* Sw. *rare.* G. *very rare.*

98. **strigosa.** Fruit lanceolate, striate. Beak directly truncate, without any distinct teeth. Fertile Spikes very lax, nodding, many-(40–50)-flowered: stalks of the lower exsert. Bracts leafy. Root stoloniferous. **p.** 5, 6. *Clayey shade. occ.*

99. **pendula.** Fr. elliptic, striate. Beak truncate, without distinct teeth. Fertile Spike cylindrical, dense, many- (100–200)-flowered. Stalks of the lower exsert. Bracts leafy; upper hardly sheathing. Root tufted. **p.** 6. *Moist shade.*

100. **microcarpa.** Fruit elliptic. Beak truncate, rather exceeding ovate, acuminate glume. Barren Spikes sometimes more than 1; fertile very long, dense, cylindrical; lower on included stalks. **p.** Sard.

** *Spikes rather lax; but not long and slender, as in the preceding section.*

101. **panicea.** Beak short, round, truncate or ending in 2 shallow, obtuse teeth. Fertile Spikes subulato-cylindrical, on exsert stalks. Bracts leafy, sheathing. Culm smooth. Root stoloniferous. **p.** 6. *Springy meadows.*

102. **vaginata.** Beak rather long, membranous, with 2, not opposite, acute teeth. Fertile Spikes lax. Stalks exsert. Bracts leafy. Culm smooth. Root stoloniferous. L. hairless. **p.** 6, 7. *Springy ground on mountains.* Sc. *very rare.* Brocken. Riesengebirge.

103. **olbiensis.** Fr. obovate, attenuate at each end. Beak short, denticulate at the mouth. Fertile Spikes 2, few-flowered; the upper close to the barren, and sessile. Bracts leafy, not sheathing. Stems tufted. **p.** 5. *Dry woods.* Hyères.—Jord.

104. **serrulata.** "Spikes about 3: fertile often with barren florets at top, cylindrical, erect; the lowest remote, stalked. Bracts leafy, not sheathing; the lowest somewhat exceeding culm. Fr. elliptic, inflated, slightly 3-edged, nearly hairless, shorter and broader than the acuminate, serrate, rough glume; hardly ciliato-serrate, with a very short, smooth, somewhat bidentate beak. L. keeled. Root creeping. **p.** 3. *Pastures on coast.* Sic."—Guss. *Said to resemble* C. glauca *in habit, and should, perhaps, be joined to that species.*

ii. *Fruit with plano-convex, bidentate beak.*

a. *Spikes almost all on slender stalks, confined to upper part of stem.*

105. **Pseudo-cyperus.** Fertile Spikes 4–6, on long stalks, cylindrical, very dense, drooping. Fr. ovato-lanceolate. Glumes lineari-subulate, rough. Culm with 3 sharp, rough edges. **p.** 6. *Wet shade.*

106. **frigida.** Fertile Spikes about 3: upper sessile; lower on very long, slender stalks. Upper Bracts without sheaths. Fr. lanceolate, ciliate. Beak without a membranous border. Root stoloniferous. **p.** 7, 8. *Moist stony mountains.* m. Eur.

107. **fuliginosa.** Fertile Spikes 2–3, oblong, dense; lower at last drooping. Bracts leafy, sheathing. Fr. lanceolate, ending in serrato-ciliate, margined beak. Root tufted. **p.** 7, 8. *Very high.* Alps.

b. *Spikes approximate, near top of culm, nearly sessile.*

108. **extensa.** Fertile Spikes 3–4, roundish, on short included stalks. Fr. ribbed from base, with a short, straight, smooth beak, the sides rapidly converging. Bracts very long, horizontal. L. channeled, very narrow. **p.** 6. *Marshes, chiefly near the sea.*

109. **flava.** Fertile Spike roundish, on included stalks. Fruit elliptic: upper part nerved, tapering into a rough-edged beak; lower squarrose or deflexed. Bracts leafy, at last spreading or deflexed. **p.** 5, 6. *Boggy meadows.*

β. *lepidocarpa*, Tausch. Fr. small.

γ. *uetliaca*, Suter. Fertile Spikes 5 or 6.

110. **Mairii.** Fertile Spikes 2–3, on included stalks. Fr. elliptic, few-nerved, tapering into a ciliate beak, never squarrose or deflexed. **p.** 5, 6. *Springy woods.* Paris.

111. **Œderi.** Fertile Spikes roundish-ovate, sessile or on included stalks. Fr. roundish ovate, striate, with a straight, nearly parallel-sided beak. Bracts leafy; in fruit reflexed. **p.** 5–7. *Bog.*

c. *Spikes racemose, not confined to upper parts of culm; the lower gradually more distant.*

* *Fruit smooth, except on margin. Lower Stalks hardly half exsert. (The Ligule in this section is usually in two parts, one almost opposite the L.)*

112. **fulva.** Fertile Spikes 2–3, oval.

Glumes ovate, without mucro. Fr. elliptic. Nut obovoid. Lower Bracts reaching to barren spike. Root tufted, or with short runners. **p.** 6. *Wet meadows and bogs.*

β. hostiana. Glumes and Ligules acute.

✓ 113. **hornschuchiana.** Fertile Spikes usually 3; lowest very distant. Glume ovate, without mucro. Fr. elliptic. Nut obovoid. Lower Bracts short. Root tufted, or with short runners. **p.** 5, 6. *Wet meadows.*

? ✓ 114. **binervis.** Fertile Spikes oblong. Fr. with the marginal ribs alone distinct, roundish-elliptic. Beak narrow, rough on edge. Glumes mucronate, *dark-purple.* **p.** 6, 7. *Heaths.*

115. **lævigata.** Barren Spikes sometimes 2. Fertile Spikes cylindrical, drooping. Glumes acuminate. Fr. elliptico-lanceolate, about 7-nerved, tapering into rough-edged beak. **p.** 6. *Moist shade.*

β. Schraderi. Glumes awned.

? ✓ 116. **distans.** Fertile Spikes oblong. Glumes mucronate. Fr. elliptic, 7-nerved on back, dull. Beak short; edge rough. **p.** 6. *Marshes.*

117. **punctata.** Fertile Spike cylindrical, erect. Glumes ovate, awned. Fr. obovate, with about 4 irregular nerves on back, shining, dotted. Beak short, smooth, almost membranous. **p.** 5, 6. *Grassy hills. rare.*

** *Fruit smooth, except on margin. Lower Stalks more than half exsert.*

✓ 118. **Michelii.** Fertile Spikes 1–3, remote. Bracts about equalling spikes. Fr. obovate, attenuate, ending rather abruptly in a linear, rough-edged beak, hardly nerved. **p.** 5. *Woody hills.* s. e. G.

119. **brevicollis.** "Fertile Spikes 1–3, 6–10 flowered. Fr. obovate, hardly nerved, with a very short, truncate, or bidentate beak, hardly equalling oblong, acuminate glume."—DUBY. **p.** Mont Parve near Belley on the Rhone.

120. **depauperata.** Fertile Spikes 3, 4-flowered, on exsert stalks from long sheaths. Fr. elliptic, strongly striate, tapering into a beak, which is membranous beyond the ends of the ribs, unequally eloven, and rough on the edge. **p.** 6. *Sandy woods.* Surrey. *very rare.* Fr. It.

✓ 121. **sylvatica.** Fertile Spikes about 4, many-flowered, drooping, on long exsert stalks, from long sheaths. Fruit elliptic, 3-edged, smooth without distinct nerves. Beak linear. Culm smooth. *L. broad.* **p.** 5, 6. *Damp woods.*

*** *Fruit downy on the back.*

122. **hispidula.** Fertile Spikes about 2, oblongo-lanceolate; lowest usually included in leafy sheath. Fr. ovate, bordered, serrulato-ciliate. L. reaching to middle of rough, 3-edged culm. Root stoloniferous. **p.** 7, 8. *Very high rocks.* Matterhorn. Räfel.

iii. *Fruit beaked, but the mouth small, membranous, and uncertain in its form.*

[A division not very clearly marked, and to which, perhaps, *frigida* and *fuliginosa* should be added.]

123. **tenuis.** Fertile Spikes about 3, distant, all on exsert stalks. Fr. lanceolate. Beak smooth. L. setaceous. **p.** 6, 7. *Stony hills. occ.* Alps. Mor. ✓

124. **ferruginea** (*Mielichoferi of Schk. and Kunth*). Fertile Spikes about 2, linear, rather lax. All the Stalks exsert, slender. All Bracts sheathing. Fr. elliptic: upper part and Beak rough. Root stoloniferous. **p.** 6, 7. *Boggy hills.* Alps. ✓

β. spadicea. Fr. ciliate; upper part hairy.

γ. Scopolii. Fr. shorter and broader.

125. **sempervirens** (*ferruginea, Schk. and Kunth*). Fertile Spikes about 2, oblong, somewhat lax. Lower Stalks exsert, erect, *sometimes refract*; upper generally included. All Bracts sheathing and leafy. Fr. ovato-lanceolate, acuminate, exceeding dark, polished, mucronate glume. Beak rough on the edge with subacute, scariose teeth. **p.** 6–8. *Grassy.* Alps. Apenn. ✓

β. erecta. Fr. rough on the surface.

126. **firma.** Fertile Spikes about 2, erect: upper nearly sessile; lower remote, on exsert stalks. All Bracts sheathing. Fr. ovato-lanceolate, smooth. Beak somewhat rough on the edge, membranous, obliquely truncato-emarginate. Segm. obtuse. L. rigid, spreading. **p.** 6–8. Mor., KOCH. Alps, KUNTH. *Closely resembling* sempervirens; *but the beak is more membranous and less decidedly bidentate, the fertile spikes have fewer flowers, and the glumes are paler.* ✓

H. *Barren Spikes more than one.*

i. *Beak none, or very minute.*

[It is difficult to characterize this subdivision. The number of barren Spikes is by no means constant; and *serrulata* of Gussone, which probably belongs naturally to this section, is described as having uniformly only one barren spike. The opening of the arillus has sometimes a very short membranous beak. The arillus itself is generally somewhat tuberceled in the upper part; but this, I am afraid, is not to be depended upon.]

✓ 127. **glauca.** All the fertile Spikes cylindrical, stalked, dense, usually drooping when in fruit. Sheaths short. Fr. obovate, nerveless, triquetro-gibbous. **p.** 5. *Moist pastures and woods.*

β. *micheliana* or *ambleocarpa.* Glumes all quite obtuse.

γ. *acuminata.* All Glumes acuminate.

I have a plant from Saorgio, near Nice, given to me by Mr. Stire, with very slender spikes, and narrow, lanceolate, acuminato-aristate glumes. It is, perhaps, C. acuminata, WILLD., *but appears distinct. As I have no fruit, I do not venture to describe it as a species.*

128. **genuensis.** "Barren Spikes about 3; fertile 2, the lower on an exsert stalk; the upper sessile. Fr. ovate, truncate. **p.** Genoa." —KUNTH.

129. **claviformis.** Fertile Spikes 2–3, remote, clavate, on long stalks, drooping. Sheaths short. Fr. elliptic, nerveless, triquetro-gibbous. Beak almost 0. **p.** 8. *Very high.* Carinthia. "*Differs from* C. glauca *in the form of the fertile spikes, their longer stalks, and longer fruit,*" KOCH.

ii. *Beak membranous.*

130. **hispida.** "Barren Spikes about 5, lineari-lanceolate; fertile about 4, thick, cylindrical, erect, rather remote; lower on a short stalk. Bracts leafy, somewhat sheathing. Stigmas 2 or 3. Fr. obovato-elliptic, ciliato-serrate on the upper part of the margin, terminating in a rather short, bidentate beak. Glume nerved, awned, ciliato-serrate. L. keeled. Root-fibrous. **p.** 5. *Marshes, &c.* Sic."—GUSS. *Perhaps the same as* C. longearistata; *but Kunth places it among the species with 2 styles.*

131. **Soleirolii.** "Barren Spikes 3–4; fertile 3–4, cylindrical, sessile, erect. Fruit roundish ovate, compressed, ciliate in upper part, with a very short, bidentate beak, shorter than the bluntish lineari-lanceolate glumes. **p.** Cors. near Bonifacio. *Resembles* C. longearistata; *but the glumes are not awned.*"—DUBY.

132. **lasiochlæna.** "Two barren, three fertile Spikes. Glumes linear, green, often with a brown border, very rough. Fr. oval, with scattered hairs. Beak short, white, bidentate. Culm 3-edged, smooth. Sard."—KUNTH.

iii. *Fruit with a firm cloven beak.*

a. *Fruit hairy all over.*

133. **filiformis.** Barren Spikes 1–2; fertile 2–3, remote, erect, dense, sessile; lowermost sometimes on a short stalk, and with a short sheath. Fr. elliptic. Beak short. Culm smooth at base, obtuse-angled, naked except quite at base. L. channeled, hardly wider than culm. **p.** 6. *Stagnant water on peat. Occ.* ✓

134. **evoluta.** Barren Spikes 2–3; fertile 3, remote, cylindrical, erect, dense; lowermost sometimes stalked. Sheaths 0. Fr. ovate, turgid. Beak short. Edges of Culm rough, acute. L. flat, broader than culm. **p.** 5. Shore of Danube near Ulm.

135. **hirta.** Barren Spikes 1–2; fertile 2–3, erect, oblong. Lower Bracts with long sheaths. Fr. elliptic, acuminate into beak. Culm smooth. L. and Sheaths hairy. **p.** 6. *Moist sandy.* ✓

b. *Beak plano-convex. Fruit smooth, except on margin.*

136. **hordeistichos.** Barren Spikes 2; fertile 3, erect, oblong. Lower Bracts sheathing. Fr. elliptic, 3-edged, tapering into a long beak. Stem short, smooth. **p.** 4. *Muddy.* lower Aust. Mor. ✓

137. **ampullacea.** Barren Spikes 1–3; fertile 2–3, remote, on short stalks, dense, cylindrical. Sheaths 0. Fr. inflated, elliptic or somewhat obovate, broad, terminating in an abrupt, linear beak. L. channeled. Culm obtusely 3-edged, smooth. **p.** 6. *Water.* ✓

138. **vesicaria.** Barren Spikes 1–3; fertile 2–3, remote, nearly sessile, erect, dense, cylindrical. Sheaths 0. Fr. inflated, ovate, nerved, tapering into the beak. Culm with 3, acute, rough edges. **p.** 6. *Water.* ✓

139. **riparia.** Barren Spikes 3–5. Glumes mucronate; fertile 3–4, erect, dense, cylindrical. Sheaths 0. Fr. ovato-elliptic, many-nerved, smooth. Beak rather short. Culm with acute, rough edges. **p.** 6. *Water.* ✓

140. **paludosa.** Barren Spikes 2–3, the lower glumes obtuse. Fertile 2–3, erect, dense, cylindrical. Sheaths 0. Fr. elliptic, nerved. Beak short. Culm with sharp, rough edges. **p.** 5, 6. *Water.* ✓

✓ β. *kochiana.* Fr. oblong. Glume of fertile Spikes with a long awn.

✓ 141. **nutans.** Barren Spikes 1–2; fertile 3–4, dense, erect, sessile; lower sometimes stalked. Sheaths 0. Fr. ovate, striate, prolonged into a short, smooth beak. Margin rounded. Culm smooth, or only slightly rough at top. **p.** 4, 5. *Moist shade.* Vienna. Schwarzbach and at Cilli in Styria. *Hardly belongs to this division.*

The following species has also been proposed.

142. **juncoides,** PRESL, with 2 barren Spikes, and one remote, complete, sessile, erect Spike. *Seems like nothing else.*

C. fusca, SUTER, is supposed by Gaudin to be a var. of *C. cæspitosa,* and may, perhaps, be *C. rigida.* *C. furcata,* LAP., seems allied to *C. binervis.* *C. bastardiana,* DC., has been determined by Messrs. Cosson and Germain to be a defective specimen of *C. pilulifera.* *C. costata,* PRESL, and *C. badea,* PERS., are quite indeterminable.

CXIII. GRAMINA.

Flower composed of Glumes enveloping the organs. Seed 1, naked, superior. Stem jointed, with a sheathing leaf at each joining. The Grasses may be divided into the following Tribes:—

1. ANDROPOGONEÆ.—Spicules in sets of 2 or 3, of which one is sessile and the others stalked, clothed with long, silky hairs. In all the European genera there is a valve-like rudiment of an exterior floret, which, on account of the smallness and delicacy of the parts, is sometimes distinguished with difficulty. Each spicule has only one developed floret; but some of the genera have barren spicules as well as fertile ones. Glumes nearly equal, enclosing the Pales, which, except in *Andropogon Allionii,* are very thin and tender . . . . Gen. 837–841.
2. PANICEÆ.—Spicules of one perfect floret and a glume-like exterior rudiment. Glumes very unequal, striated. Barren floret large, and protecting the smooth and polished coriaceous pale. In *Lappago* the outer glume is filmy, the inner coriaceous . . . . Gen. 842–847.
3. ORYZEÆ.—Spicule of one perfect floret, and, in the European genera, without any additional rudiment. Glumes small and separate from the floret, or totally wanting. Pales of equal length, nearly valvular . . Gen. 848–850.
4. PHALARIDEÆ.—Spicule of one perfect floret, and indications, more or less complete, of two other exterior imperfect ones; the outer pale of the perfect floret being always within the outer glume. Glumes large, including the floret . . . . Gen. 851–855.
5. PHLEINEÆ.—Spicules 1-flowered, without any exterior rudiment. Glumes nearly equal, larger and firmer than the scariose pales. Inflorescence in a spike-like panicle. Some species have a filiform interior rudiment, on which, however, it seems impossible to divide the genera . Gen. 856–860.
6. AGROSTIDEÆ.—Spicules 1-flowered, without any exterior rudiment. Glumes nearly equal. Inflorescence a loose, equal panicle. This tribe differs from the preceding chiefly in its inflorescence; but the pales are usually larger and firmer in proportion to the glumes . . . . Gen. 861–866.
7. STIPACEÆ.—Spicules 1-flowered, without a rudiment. The convolute tip of the outer pale supporting an awn . . . . Gen. 867–870.
8. ARUNDINACEÆ.—Florets enveloped in long silky hairs within the calyx . . . . Gen. 871–874.
9. CHLORIDEÆ.—Spicules 1- or more flowered, without an exterior rudiment, disposed in 2 rows on one side of a flattened rachis. A similar disposition of the spicules sometimes occurs among the *Andropogoneæ* and *Paniceæ* . . . . Gen. 875–879.

10. AVENACEÆ.—Spicules of more than one floret. Glumes scariose on the margin, nearly equal, and almost or quite as long as the spicule. Awn, if any, dorsal, and geniculate and twisted. In *Gaudinia* the glumes fall very short of the spicule . . . . Gen. 880–888.

11. FESTUCACEÆ.—Spicules of more than one floret, scattered. Glumes scariose, unequal, falling short of the spicules. Outer Pale herbaceous or membranous; inner scariose . . . . Gen. 889–904.

12. HORDEACEÆ.—Spicules with an interior rudiment, or with more than one floret; in opposite rows, on an alternately channeled rachis . . Gen. 905–911.

13. PAPPOPHORÆ.—Glumes entire, less firm than the outer pale, which is coriaceous, terminating in many rigid points. Spicules 1- or more flowered, sessile in a tiled head . . . . Gen. 912.

14. ROTBOELLACEÆ.—Spicules (in the European genera) all perfect, with only one perfect floret (except in *Lepturus pannonicus*); sessile, or imbedded in a channeled rachis. Glumes, if any, unilateral . . . Gen. 913–915.

Tribe I. *ANDROPOGONEÆ.*

Sect. I. Spicules all fertile, clothed with long silky hairs.

837. SACCHARUM.

1. **ægyptiacum.** Pan. lanceolate, crowded: lower branches compound. Stalks villous. L. keeled. Margin very rough. Culm downy. **p.** 7, 8. Banks of the Oreto at Palermo.

838. IMPERATA.

1. **cylindrica.** L. convolute. Knots smooth. **p.** 6–8. *Sandy shores* of Mdt.

839. ERIANTHUS.

1. **Ravennæ.** Pan. much branched. L. channeled. **p.** 8–10. *Beds of torrents* near Mdt.

Sect. II. Lateral or stalked Spicule barren.

[There is usually the rudiment of an external floret in the fertile spicule.]

840. ANDROPOGON.

1. **Allionii.** Spike solitary. Culm branched. L. rough. Sheaths hairless. Glumes and Stalks of barren Spicules smooth; of fertile hispid. Awn very long, downy. **p.** 7, 8. *Limestone rocks.* Nice. it. Lakes.

2. **distachyus.** Spikes in pairs, terminal. Barren Spicules awned. Culm undivided. **p.** 5. *Stony.* Nice. Prov.

3. **hirtus.** Spikes in pairs, panicled. Barren Spicules awnless. Upper part of the Stalk, common to a pair of spikes, with long hairs. **p.** 7. *Dry.* It. mdt. Fr.

4. **pubescens.** Spikes in pairs, panicled. Awns of complete Flt. six times as long as floret. Barren Spicule awnless. Upper part of Stalk downy. **p.** 8, 9. Campania.—BERT.

5. **Ischæmum.** Spikes many, fan-like. Glumes striate. Lower Glume and Stalk of the awned complete Spicule hairy. **p.** 7, 8. *Dry hills.* s. Eur. *Spicules purplish.*

6. **Gryllus.** Fl. in panicles. Branches whorled, spreading, 3-flowered. **p.** 6, 7. *Dry hills.* s. Europe.

841. SORGHUM.

1. **vulgare.** Pan. compact, branched. (Branches downy. Rachis hairless, KUNTH.) (Awn from extremity of pale, DUBY.) (Barren Fl. on very short stalks, KOCH.) Barren Flts. extending considerably beyond fertile. L. and Sheaths smooth. Root fibrous. **a.** 6, 7. *Escapes.* s. Fr. It.

2. **halepense.** Pan. spreading. (Branches and Rachis rough, KUNTH.) (Awn continued down to receptacle, DUBY.) (Stalk of barren Flt. about half as long as floret, KUNTH.) Barren Flts. extending considerably beyond fertile. L. and Sheath smooth. Root creeping. **p.** 7, 8. *Cult.* s. Eur.

3. **strictum.** "Pan. rather close. Fl. awned, villous at base. Pales 3: the middle one bifid. Sheaths villous. **p.** s. France. *Differs from* S. halepensis *by its crowded panicle, narrower L., villous sheaths, and the spicules surrounded by a ring of hairs.*" —KUNTH.

4. **saccharatum.** Erect. Pan. spreading: branches whorled, nodding. Glumes hairy. Pales 3 in the perfect, 1 in the neutral floret. Barren Flt. falling short of fertile. Root fibrous. **a.** 7. *Escapes from cult.* It.

Tribe II. *PANICEÆ.*

842. DIGITARIA.

✓ 1. **sanguinalis.** Spikes 2–9. L. and Sheaths hairy. Outer Glume minute, triangular; inner about half as long as pale. Margin of barren Flt. rough. **a.** 7–9. *Cult.* m. and s. Eur.

✓ 2. **ciliaris.** Spikes 4–8. Outer Glume very minute, ovate; inner about half as long as pale. Barren Flt. ciliate with fine long hairs. **a.** 7–9. *Sandy.* s. Fr. G. Sw. It.

✓ 3. **humifusa.** Nearly smooth, much branched. Spikes 2–4. Outer Glume wanting; inner, and subobtuse barren Flt. downy, about equal; as long as pale. Pales equal, successively investing the seed. **a.** 8, 9. *Sandy cult.* Eng. *rare.* Belg. Fr. G. Sw.

4. **debilis.** Smooth, branched. Spikes 2–5. Outer Glume wanting; inner as long as pale. Barren Flt. acuminate, exceeding pale. **a.** 5, 6. Ischia *in the hot vapours of* Casciotti.

✓ 5. **paspaliformis.** Hairless, except at the opening of the sheath, branched, creeping. Spikes in pairs. Outer Glumes small, scariose, sometimes wanting; inner as long as pale and barren Flt. **p.** 7. *Nat. at* Bordeaux.

843. PANICUM.

✓ 1. **repens.** Stoloniferous. Panicle few-flowered. Branches erect. Outer Glume broad and short, entire, surrounding base of spicule; inner and barren Flt. equal, acute, plicato-nervose at the tip. L. folded, downy above. Sheath smooth, except at mouth. **p.** 7–10. *Sea-shore.* Hyères. Liguria. Sic.

2. **capillare.** Pan. much branched, capillary, spreading, straight. Fl. widely scattered. Outer Glume ovate, acute; inner and barren Flts. acuminate, smooth. Sheaths hairy. **a.** *Summer.* Nice. *The small and scattered Fl. form the most obvious distinction between this and the following.*

✓ 3. **miliaceum.** Pan. lax, nodding. Glumes acuminate, plicato-nervose, hairless. Sheaths hairy. **a.** 7. *Escapes from cult.* Fr. It.

4. **compressum.** Pan. oblong, erect. Spicules ciliate. L. and Sheaths downy. Culm branched, compressed. **p.** 10, 11. *Calc. rocks.* Sicily.

5. **Teneriffæ.** Pan. spreading, afterwards closing. Glumes villous. Stalks smooth. Throat of Sheath hairy. L. subulate, short, flat, afterwards involute. Root somewhat creeping. **p.** 6–8. *Sandy coast.* Messina. ✓

844. OPLISMENUS.

1. **undulatifolius.** Spicules in distant clusters on a simple spike. Rachis very hairy. Glumes awned, smooth, somewhat fringed. L. ovato-lanceolate, acuminate, undulate. **a.** 8, 9. *Shade.* It. Sw. n. It. ✓

2. **Crus-Galli.** Spikes compound or decompound. Flts. tiled. Glumes and barren Flts. hispid, pointed or awned. Outer Pale with a rough point. Rachis bristly. **a.** 7, 8. *Rich cult.* s. Eur. Eng. *very rare.* ✓

3. **zonalis.** "Rac. spike-like, compound. Branches simple, remote, erect. Spicules secund, without awns. Rachis 3-edged. L. without stipules. **a.** 8, 9. *Fields.* Palermo."—BERT.

4. **eruciformis.** "Rac. spike-like, compound. Branches simple, approximate, erect. Spicules secund, in two rows, without awns. Perfect Flts. very blunt. Stipule (Ligule) bearded. **a.** 8–10. Pisenum."—BERT. Termini.

845. SETARIA.

1. **glauca.** Spicules crowded. Invol. 1-flowered, of many setas, toothed forwards. Outer Pale of complete Flts. strongly transversely wrinkled. **a.** 8, 9. *Cult.* s. Eur. ✓

2. **viridis.** Spicules crowded. Invol. generally 1-flowered, of 2–3 setas, toothed forwards. Pales nearly even. **a.** 7–9. *Cult.* Eng. *rare.* s. Eur. ✓

3. **verticillata.** Pan. spike-like, lobed: branches verticillate. Invol. 1-flowered, of many setas, their teeth reversed. **a.** 7, 8. *Cult.* s. Eur. ✓

4. **italica.** "Pan. spike-like, decompound, lobed. Setas 2–3, toothed forwards. Pale of complete Flt. nearly smooth. L. flat, rough. Sheath smooth. **a.** 7, 8. *Cult.* Vienna. Canton of Tessin."—BERT.

5. **germanica.** "Rac. spike-like, nearly

continuous. Rachis hirsute. Invol. of Setas hardly as long as the raceme. Outer Pale of complete Flt. quite smooth. **a.** 7, 8. Near Trent."—Bert.

846. PENNISETUM.

1. **ciliare.** Setas twice as long as floret, equal, or one of the inner ones alone lengthened. Glumes nearly equal. Inner Pale bidentate. Styles separate, capillary. **p.** 11, 12, Monte Pellegrino; 4, 5, Lipari.

847. LAPPAGO.

1. **racemosa.** Glumes at last horny. Prickles crooked. Spicules disposed in short spikes, which are united into a raceme. Upper Spicule of each Spike tabescent. **a.** 6, 7. *Sandy.* Fr. Vallais. It.

Tribe III. *ORYZEÆ.*

848. LEERSIA.

1. **oryzoides.** Pan. effuse. Glume 0. Pales ciliate on the keel. Upper Sheath very long and rough. **p.** 8, 9. *Drains in wet meadows and rice-fields.* s. Eng. s. Eur.

849. ORYZA.

1. **sativa.** L. linear, rough. Outer Pale ribbed. **a.** *In field cultivation in* Lombardy.

850. EHRHARTA.

1. **panicea.** "Culm branched. Rac. lax, somewhat compound at base. One of the neutral Flts. transversely wrinkled. **p.** 7. Villa Regia. Portici."—Kunth, *whom I have followed in putting the plant among the* Oryzeæ.

Tribe IV. *PHALARIDEÆ.*

851. PHALARIS.

A. *Glumes conspicuously winged on the keel.*

1. **canariensis.** Pan. spike-like, ovoid. Wing rounded, nearly entire. Neutral Flts. 2, nearly equal, more than half as long as the fertile florets. **a.** 6, 7. *Escapes.*

2. **nitida.** Spike ovoid. Glumes acute. Wing somewhat rounded, entire. Neutral Flts. 2, very small, ovate, membranous. **a.** 4, 5. *Clayey hills.* Sic.? Ponte Galera near Rome.

3. **truncata.** Rac. spike-like, cylindrical. Wing entire, separated by a sinus from the top of the glume. Neutral Flts. small, lanceolate, membranous. Pale of fertile Flts. with adpressed hairs. Root fibrous. 5, 6. *Fields.* Cal. Sic. Orvieto.

4. **nodosa.** Pan. spike-like, lanceolate. Glumes acute. Wing narrow, entire. Neutral Flt. sublanceolate, villous, as well as the pale. **p.** 6. *Dry clay.* Sic. Civ. Vecchia.

5. **aquatica.** Pan. spike-like, cylindrical. Glumes acute. Wing eroso-dentate, terminating abruptly. No barren Flt. Pales thin, nearly smooth. Roots beaded. **p.** 6. *Coasts* of Mdt.

6. **minor.** Pan. spike-like, oblong. Glumes acuminate. Wing narrow, jagged. Outer barren Flt. a minute fleshy scale; inner membranous, half as long as the villous pale. **a.** 5. Genoa. Rome. Sic. Sard.

7. **gracilis.** "Pan. very short, ovoid. Glume acute, mucronulate, with a broad, toothed wing, truncate below the top. Barren Flt. solitary, linear, very small. Glume of fertile Flt. villous. Upper Sheath inflated, leafless. Culm slender. Root fibrous. Malta." —Parl.

8. **paradoxa.** Rac. spike-like, obovato-cylindrical: middle and upper branches somewhat cymose. Small, blunt, neutral Spicules mixed with the others at the base of the spike. **a.** 5. *Cult.* It. Istr. Trieste. s. Fr.

B. *Keel of Glumes not winged.*

9. **arundinacea.** Pan. erect, spreading. Barren Flts. very minute, crested with long hairs. **p.** 6, 7. *Wet. Wanting in s. It.*

852. ANTHOXANTHUM.

1. **odoratum.** Pan. spike-like. Fl. nearly erect. Glume about as long as the awns. **p.** 4–6. *Meadows.*

2. **gracile.** Pan. short. Fl. hairless, divaricate. Longer Awn twice as long as glume. **a.** 3–5. *Calc. pastures.* Sic. Sard.

853. HIEROCHLOA.

1. **borealis.** Pan. somewhat one-sided. Stalks smooth, complete. Flt. awnless; barren slightly awned. Root creeping. **p.** 5, 6. n. c. G. Sc. *very rare.* It. Tyr.

2. **australis.** Pan. somewhat one-sided. Stalks bearded. Complete Flt. awnless; lower barren, with a short terminal awn; upper with a bent dorsal awn. **p.** 5, 6. *Stony hills.* Mülhausen. Auv. Mendes. Mtp.

3. **parviflora.** "Pan. erect. Stalks bearded at the base. Flt. less than the glume. Awn of complete Flt. from below the top, exceeding glume. Sic."—Kunth. *Not in Gussone.*

854. COIX.

1. **Lachryma.** Spicules axillary, stalked, hardened. Invol. white and shining. **p.** 5–8. *Slow streams* at S. Cosimano near Syracuse, and near Palermo. *Cultivated originally to form rosaries of the fruit-like involucra, but now naturalized.*

Zea.

Zea Mays, the Indian corn, is widely cultivated in the s. of Eur., but is, I believe, nowhere in any degree naturalized. Its large size, and the fertile spikes being quite separate from the barren panicle, make it easily recognizable.

855. LYGEUM.

1. **Spartum.** Cal. sheath-like, beaked. **p.** 3–5. *Clayey hills near the sea.* Sic.

Tribe V. *PHLEINEÆ.*

856. ACHNODONTON.

1. **bulbosum.** Spike cylindrical. Glumes elliptico-oblong, mucronulate, roughish. **a.** 6. *Dry.* s. Eur.

857. PHLEUM.

A. *With rudiment of second interior Floret.*

1. **asperum.** Pan. spike-like, cylindrical. Glumes cuneiform, pointed, (inflato-angular, Koch,) rough. Culms tufted. No barren shoots. **a.** 6, 7. Eng. *rare.* Prov. It. s. G.

2. **arenarium.** Pan. spike-like, obovato-lanceolate. Glumes lanceolate, acuminate, ciliate on keel, three times as long as the truncate, notched corolla. Culms ascending. No barren Tufts of L. **p.** 6. *Sandy shores.*

3. **Michelii.** Pan. spike-like, cylindrical. Glumes lanceolate, acuminate, ciliate on the keel. Pales of substance of glumes, oblong, hairy; inner cloven. Root slightly creeping, and producing barren tufts of L. **p.** 7. *Mountain pastures. Br. rare.* Jura. Alps. Madonie.

4. **Bœhmeri.** Pan. spike-like, cylindrical. Glumes lanceolate, obliquely truncate, acuminate, mucronate, rather rough. Keel with a few bristles. Culm simple. Root tufted, producing barren tufts of L. **p.** 6, 7. *Barren hills.* Eng. *rare.* Fr. G. Sw. n. It.

B. *Without any rudiment.*

5. **pratense.** Rac. spike-like, cylindrical. Glumes truncate, awned, ciliate on the keel. Awn much shorter than the glume. **p.** 6, 7. *Meadows.*

β. *Bertolonii.* Fewer cilia on keel. Lower Flts. abortive.

γ. *nodosum.* Rac. oval, short. Culm thickened at base.

6. **echinatum.** Spike oval. Lower Spicules deflexed! Glumes shorter than the rough awns. Keel ciliate at base. L. smooth. Root fibrous. **a.** 5. *Grassy hills.* Sic.

7. **alpinum.** Rac. spike-like, oblong. Glumes truncate, ciliate on the keel, each with an awn as long as itself. **p.** 7. *Mountain meadows.* Alps.

8. **commutatum.** "Pan. ovato-oblong, *not exceeding an inch in length.* Glumes truncate, ciliate on back. Seta about three-fourths as long as glume, rough, not ciliate. Sheath of upper L. inflated, three or four times as long as L. Upper Ligule very short and obtuse. *In* P. alpinum *the spike is longer, the upper sheath hardly inflated, and only twice as long as L.; and the uppermost L. oblong, acute.* **p.** 7. Sc."—Bab.

858. ALOPECURUS.

A. *Glumes united at the base.*

1. **agrestis.** Culm erect; upper part roughish. Spike nearly simple, tapering at each end. Glumes united to above the middle. **a.** 6, 7. *Grass and cult. Wanting in Sic.*

2. **alpinus.** Culm erect, smooth. Pan. spike-like, ovoid. Glumes obliquely abrupt, acute, very villous, nearly as long as the dorsal awn of pale (which projects one-third of its length beyond the pale, Bab.). Outer Pale with distant ribs. **p.** 7. Loch na Gar. Ben Lawers. Mountains of Clova.

3. **pratensis.** Culm erect, smooth. Spike

somewhat panicled. Glumes acute, villous, falling short of awn (which projects more than half its length beyond the pale, BAB.). **p.** 5. *Meadows. Rare in* Sw. *Wanting s. of Apenn.*

4. **nigricans.** " Culm erect, smooth. Pan. cylindrical, obtuse. Glumes acute, villoso-ciliate. Plant with long creeping runners. **p.** 5, 6. *Meadows.* Hamb."—KOCH.

5. **geniculatus.** Culm ascending, geniculate. Spike cylindrical. Glumes obtuse, ciliate (rather longer than pale. Awn from near base of pale, and projecting half its length beyond it, BAB.). Anthers linear. **p.** 6, 7. *Wet.*

6. **fulvus.** Culm ascending, geniculate. Spike cylindrical. Glumes obtuse, ciliate (shorter than pale. Awn from below middle of pale, and hardly extending beyond it, BAB.). Anthers roundish. **p.** 7. *Ditches and wet meadows.* Eng. Fr. G. Sw.

B. *Glumes distinct.*

7. **bulbosus.** Culm erect. Spike simple, taper. Glumes villous, linear, acute. Root bulbous. **p.** 6. *Marshes near the sea.*

8. **utriculatus.** Culm ascending. Spike racemose, ovoid. Glumes with keel, dilated above the middle. Upper Sheath inflated. **a.** 4, 5. *Clayey meadows.* s. e. Fr. It.

9. **Gerardi.** Spike subglobose. Glumes lanceolate, acuminate, villous, unequal. Awn hardly exceeding pale. Roots clustered, swelling. *A small inner pale is sometimes observable.* **p.** 6. *Very high.* e. Alps. Pyr. *Not in Sw.*

859. CRYPSIS.

1. **alopecuroides.** Culm simple, terete. Spike cylindrico-oblong, naked. Glumes ciliate, acute. **a.** 9, 10. *Clayey meadows.* Fr. Aust. Bav.

2. **nigricans.** Culms slender, simple, diffuse. Spike elliptico-oblong, naked. Glumes smooth, subobtuse, ciliato-scabrous on the keel. **a.** 10, 11. *Roadsides overflowed in winter.* Sic.

3. **schœnoides.** Culms branched, compressed. Spike ovoideo-oblong, sheathed at base. **a.** 8, 9. *Marshy.* s. Fr. s. G. It.

4. **aculeata.** Upper Pale 1-nerved! Stamens 2! Culm branched, compressed. Heads hemispherical, involucrate. **a.** 8, 9. *Marshy coasts* of Mdt.

860. GASTRIDIUM.

1. **lendigerum.** Pan. spike-like. Glumes acuminate, shining. Awn of Pale long. **a.** 6–8. *Cult. occ.*

2. **muticum.** Pan. spike-like. Glumes oblong, acute, rough. Awn very short or wanting. **p.** 6–8. *Cult. occ.* s. Fr. Sic.

Tribe VI. *AGROSTIDEÆ.*

861. POLYPOGON.

1. **monspeliensis.** Divisions of Glumes short, rather obtuse. Awn straight, three times as long as glume. Outer Pale somewhat 4-toothed. Pan. rather spike-like. Root fibrous. **a.** 6, 7. *Moist uncult. salt.* Eng. *rare.* Mdt.

2. **maritimus.** Divisions of Glume acute. Awn four times as long as glume. Outer Pale 4-toothed, awnless! Pan. lobed, contracted. Root creeping. **a.** 5, 6. *Clay.* Coasts of Mdt.

β. subspathaceus. Pan. sheathed at base.

3. **littoralis.** Glume lineari-lanceolate, as long as awn. Pale awned beneath the point. Pan. loose. Root creeping. **p.** 8. *Muddy shores. Very rare.* Eng. Isl. of Norderney. Montpellier.

862. MILIUM.

1. **effusum.** Pan. diffuse: the branches widely spreading. Awn 0. **p.** 6, 7. *Woods.*

2. **vernale.** Pan. somewhat compressed: branches erect. Fl. scattered, awnless. Glumes obtuse, exceeding the smooth and polished pale. L. linear, short, flat. **a.** 4. *Roadsides.* Cors. Cal. Nebrodes.

863. AGROSTIS.

A. *Panicle spike-like.*

1. **nitens.** Glumes shining, lanceolate, acute, serrato-scabrous on the keel. Pales villous; outer with awn at base, and ending in two long setas. L. distichous. Culm ascending. *Habit of Gastridium.* **a.** 4, 5. *Sandy shores.* Trapani. Santa Croce in Sic.

B. *Panicle not spike-like. No Rudiment of second floret.*

i. *Pales equal.*

2. **verticillata.** Pan. compact. Glumes

obtuse, pubescent. Keel ciliolate. Awn 0. Root fibrous. Culms tufted, ascending. **p.** 7–9. *Wet.* Italy.—Bert.

ii. *Inner Pale about half as long as outer.*

✓ 3. **alba.** Pan. contracted when in fruit: branches rough. Glumes lanceolate: *keel rough.* Awn usually 0. Culm spreading, creeping. L. linear. Ligule oblong, nerved. **p.** 7, 8. *Wet.*

β. *stolonifera.* With long prostrate runners.

γ. *glaucescens.* L. short, rigid, glaucescent.

δ. *frondosa.* Outer Pale truncate, with 5 nerves: 4 of them prolonged into as many setas. *I follow Bertoloni with doubt in uniting this to* A. alba.

ε. *maritima.* Glumes smooth. Branches of Pan. short.

ζ. *straminea.* An Awn from above middle of outer pale.

✓ 4. **vulgaris.** Pan. ovato-oblong: branches diverging, roughish. Glumes equal. Culm erect. Lig. short, truncate. **p.** 7, 8. *Woods and pastures.*

iii. *Inner Pale very small, or wanting.*

✓ 5. **canina.** Pan. diffuse, ovate: branches rough, diverging. Glumes ovato-lanceolate, acute. Awn from below middle of pale, bent. Root-L. setaceous. Root creeping. Culm decumbent. **p.** 6–8. *Peaty. Inner Pale often wanting. Hooker and Gaudin profess never to have met with it.*

6. **pusilla.** "Glumes rough on keel. Awn from below middle of pale, geniculate, *white.* Root-L. setaceous. Lig. of lower L. obtuse; of upper multifid. Root creeping. Belgium."—Kunth.

7. **glaucina.** Pan. contracted. Stalks rough. Glumes acuminate, rather longer than 2-pointed pale. Awn from base of pale, bent, somewhat exceeding glume. Root creeping. **p.** 6. *Heaths.* Anjou.

✓ 8. **setacea.** Pan. compact, oblong. Glumes lanceolate, acuminate. Stalks rough. Awn from base of pale, bent. Inner Pale very minute. Root-L. setaceous. Root tufted. **p.** 6. *Dry heaths.* w. Eng. w. Fr.

✓ 9. **alpina.** Pan. ovate: branches spreading, hispid. Glumes lanceolate, acuminate. Awn from base of truncate pale. Root-L. setaceous. Root tufted. **p.** 7, 8. *Very high pastures.* Fr. Sw. Bav. Sty.

✓ 10. **rupestris.** Pan. oblong: branches spreading, smooth. Glumes lanceolate, acute. Awn from below middle of pale. Root-L. setaceous. Root tufted. **p.** 7, 8. *Stony mountains.* Fr. Sw. Bav. Boh. Sil.

11. **pulchella.** "Pan. effuse: branches capillary, divaricate, one-flowered. Spicule ovate. Glumes obtuse. Awn 0. L. convolute, filiform. **a.** 6. Bosco di Castello Buono, Sic."—Guss.

✓ 12. **elegans.** Pan. lax, capillary. Stalks smooth, very fine. Glumes smooth, subacute. Awn 0. Pale 1, obtuse. L. involuto-subulate. Culm erect, *very fine and small in all its parts.* **a.** 5. *Sand.* Dax. Toulon.

✓ 13. **pallida.** Pan. much branched. Glumes acuminate; the outer rough on keel. Pale 1, obtuse, with 2 minute points. Dorsal Awn straight, twice as long as glume. **a.** 5. *Sandy inundations.* Fréjus. Cors. Sic. Viterbo. *Resembles* A. interrupta.—Bert.

C. *Spicules with rudiment of second floret.*

✓ 14. **Spica-Venti.** Pan. diffuse, many-flowered. Awn very long, somewhat flexuose, from beneath tip of outer pale. Anthers lineari-oblong. **a.** 6, 7. *Cult. Not in s. Italy.*

✓ 15. **interrupta.** Pan. contracted: lower branches remote. Awn very long, somewhat flexuose, from beneath tip of outer pale. Anthers roundish. **a.** 6, 7. *Cult.* Fr. G. Vall. n. Italy.

Doubtful.

16. **comosa.** "Pan. very large, nodding. Fl. awned. L. rather rough, reed-like. It. =*Piptatherum multiflorum?*"—Kunth. *Not in Italian floras.*

864. VILFA.

✓ 1. **pungens.** Glumes unequal. Pan. contracted. Florets awnless. L. involute, rigid, pungent; the upper obliquely opposite. Culm branched. **p.** 7, 8. *Sandy shores.* Nice. Sicily.

865. COLEANTHUS.

✓ 1. **subtilis.** Culm filiform, prostrate, flexuose. Sheaths ventricose. Pan. divaricate. **a.** 7–9. *Borders of pools.* Boh.

866. KNAPPIA.

1. **minima.** Very small. Root fibrous. Stems numerous. **a.** 4, 5. *Sand.* Eng. *very rare.* Fr. Nice. Pdm.

Tribe VII. *STIPACEÆ.*

867. PIPTATHERUM.

1. **cærulescens.** Cor. smooth. Awn falling short of glume. L. involuto-setaceous. All the Ligules long, erose. **p.** 5. *Calc. hills.* mdt. Fr. Carrara. Sic.

2. **paradoxum.** Pan. few-flowered. Awn twice as long as glume. Pales hairy. L. flat. All the Ligules short and truncate. **p.** 7. *Calc. woods.* Nice. Prov. Carin. Carn. Monte Baldo. Tivoli.

3. **Thomasii.** "Culm geniculate at base. L. convolute, smooth, narrow linear. Ligule short, truncate. Pan. long, lax, somewhat contracted. Pedicels in half whorls, the lower usually abortive. Glumes smooth, acuminate, nearly equal. Awn terminal, straight, somewhat exceeding the spicule. **p.** Cape Corso in Cors."—Duby.

4. **multiflorum.** Pan. many-flowered. Awn as long as glume. Pales smooth. L. flat. Lower Ligule truncate; upper laciniate. **p.** All the year. *Walls and dry.* mdt. Fr. Italy.

868. STIPA.

1. **pennata.** Awn twisted below, feathery above the upper knee, 12 *inches long.* Glumes subulate, with a long, scariose point. Anthers hairless. **p.** 6, 7. *Dry hills.* Fr. G. Sw. Italy.

2. **juncea.** Awn hairy throughout, *about* 3 *in. long*; upper part straight, much longer than the twisted lower. Glume subulate. Anthers bearded. All L. setaceous. Upper Sheaths not enlarged. **p.** 5. *Dry hills.* s. Fr. Lig.

3. **capillata.** Awn *about* 6 *in. long*; upper part finely pubescent, flexuose, more than twice as long as the twisted and nearly smooth lower. A broad Sheath embracing base of panicle. **p.** 6, 7. *Dry hills and walls.* Nice. Cors. Rous. G. Sw. Aosta.

4. **tortilis.** Pan. spike-like. Awn *about* 4½ *in. long*; the lower part much twisted, armed with strong hairs. Inner Glume villous. Sheaths broad; upper generally embracing base of panicle. **a.** 4. *Dry.* Nice. Cors. Rous. Civ. Vecchia. Tivoli. Sic.

5. **Aristella.** Awn hispid, not twisted; twice as long as rostrato-acuminate glume. Flts. sessile. Anthers hairless. All L. involuto-setaceous. **p.** 7. *Dry rocky.* Nice. n. c. Italy.

869. ARISTIDA.

1. **Adscensionis.** Hairless. L. convolute. Pan. long, branched, straight, subsecund. Glumes unequal, subbidentate; the larger about equalling the floret. Awn rough. **p.** 5, 6. Monte Gallo near Pal.

870. ACHNATHERUM.

1. **Calamagrostis.** Pan. diffuse. Pales clothed with long hairs. Culms numerous, leafy. **p.** 7, 8. *Warm stony.* s. Fr. n. It. Carin. Apenn.

Tribe VIII. *ARUNDINACEÆ.*

871. ARUNDO.

A. *Spicules 1-flowered, without rudiment. Hairs from base of Pale.*

1. **Calamagrostis.** Pan. diffuse. Glumes lanceolate, acute. Hairs exceeding florets. Outer Pale half as long as glume, emarginate. Awn very short. L. flat. Ligules large, acute. **p.** 6–8. *Wet.* e. Eng. Fr. G. Sw. n. It.

2. **littorea.** Pan. diffuse. Glumes lanceolate, compresso-subulate at the tip. Hairs exceeding floret. Awn terminal, about half as long as outer pale. L. with involute margin. Ligules large, acute. **p.** 7, 8. *Sandy riversides.* Fr. *occ.* Danube. Sw. adr. G.

3. **epigejos.** Pan. straight, spreading. Glumes nearly sessile, lanceolate, pointed. Hairs exceeding pale. Awn equalling floret; from middle, or rather above middle, of pale. Tip of outer Pale toothed. L. roughish. Culm smooth. Ligule elongated. **p.** 6, 7. *occ.*

4. **halleriana.** Pan. diffuse. Glumes lanceolate, acute. Hairs as long as pale. Awn straight from below middle of pale, which it does not exceed. L. flat. Culm smooth. Ligule large, acute. **p.** 7, 8. *Moist shade.* Sw. *occ.*

5. **tenella.** Pan. diffuse. Glumes lan-

ceolate, acute. Hairs about half as long as floret. Awn dorsal and twisted, or wanting. L. flat, acuminate. Ligule large, acute. **p.** 7, 8. *Mountain pastures.* Bex. *Mr. Kippist finds that the inner Pale is wanting or very minute.*

B. *With rudiment of a second floret. Long Hairs from the base of the Pale.*

✓ 6. **stricta.** Pan. erect. Glumes ovate, subacute, hardly exceeding pale. Awn straight from below middle of Pale, which it hardly exceeds. Hairs shorter than floret. Rudiment a stalked tuft of hairs. L. somewhat involute. Ligule very short, truncate. **p.** 6, 7. *Moist meadows.* Rescobie near Forfar. Delamere Forest. Irel. n. e. G.

✓ 7. **montana.** Pan. spreading. Glumes acute, about as long as pale. Awn from near the base, geniculate and twisted, exceeding glume. Hairs not exceeding floret. Rudiment a hairy stalk. Ligule long, acute, lacerate. **p.** 7, 8. *Woody hills.* Fr. G. Sw.

✓ 8. **sylvatica.** Pan. spreading. Glumes acute, rather exceeding florets. Dorsal Awn geniculate, exceeding glume. Hairs very short; *about one-fourth of pale.* Rudiment a hairy stalk. Ligule short, rounded. **p.** 7, 8. *Woody hills.* Fr. G. Sw. n. It.

C. *Calyx with* 2 *flowers, or* 1 *and the rudiments of a second. Long hairs from a ring above the base of pale.*

✓ 9. **Plinii.** Pan. erect. Upper part of Pale smooth, and tapering into a seta, which exceeds glume. Rudiment a smooth stalk, with a scale or two at the end. **p.** 9. *Ditches and banks.* Rome. Florence. Bologna. *Has sometimes 2 florets, when it has been called* biflora *and* mauritanica.

D. *Calyx* 3–5-*flowered.*

✓ 10. **Donax.** Glumes nearly equal; inner as long as floret. Outer Pale setigerous. Hairs from near base, falling short of outer pale. Ligule a narrow membrane fringed with short hairs. **p.** 9, 10. *Coasts* of Mdt. Lago di Garda.

11. **altissima.** Cal. 3–5-flowered. Glumes unequal; the outer half as long as floret. Ligule composed of long hairs. **p.** s. Fr.—Benth.

872. AMMOPHILA.

✓ 1. **arenaria.** Glumes lanceolate, acute. Hairs one-fourth as long as pale. Rudiment an acute, hairy stalk. L. involute. **p.** 7, 8. *Sandy shores.*

✓ 2. **baltica.** Glumes ovato-lanceolate, very acute. Hairs half as long as pale. Rudiment generally wanting. L. involute. **p.** 7. *Sandy shores* of Baltic.

873. PHRAGMITES.

✓ 1. **communis.** Pan. lax. Cal. 4–7-flowered. **p.** 8, 9. *Wet, and still water. Spicules purple.*

2. **isiacus.** "Pan. very large, oblong. Cal. 2–5-flowered. Flts. awnless, far exceeding glumes. L. and Sheaths quite smooth, glaucous. **p.** 9."—Kunth. *Marshes between* Sargans and Ragatz in Sw. *Spicules yellowish-green, afterwards reddish.*

874. AMPELODESMOS.

✓ 1. **tenax.** Cal. 2-flowered. L. involuto-subulate. **p.** 5–7. *Dry calc. hills.* It. Sic.

Tribe IX. *CHLORIDEÆ.*

875. CYNODON.

✓ 1. **Dactylon.** Spikes 3–5, digitate. Pale smooth, subciliate, longer than glume. Rudiment setiform. **p.** 7, 8. *Dry sandy.* Cornwall. *Common further south.*

876. DACTYLOCTENIUM.

✓ 1. **ægyptiacum.** Spikes 4–5. Rachis smooth. Inner Glume mucronate. L. fringed at base. Culm ascending. **a.** 9–11. *Sandy.* Paternò in Sic.

877. BECKMANNIA.

✓ 1. **eruciformis.** Erect. L. flat. Ligule long. **p.** 5. *Wet.* Ostia. Albano. Tusc. Sil.

878. LEPTOCHLOA.

✓ 1. **arabica.** Glumes equal. Flts. stalked, awnless. **a.** *Sandy shores.* Giulia Nova and Pescara. K. of Nap.

879. SPARTINA.

✓ 1. **stricta.** Culm very smooth. Spikes 2–4. Glumes downy. Keel unarmed. L. convolute, pungent, with a line of separation from sheath, at which they afterwards break off. **p.** 8. *Muddy shores.* s. Eng. n. Fr.

2. **alterniflora.** Smooth. Spikes 4–10. Glumes ciliate on keel. L. flat, convolute at point, continuous with sheath. **p.** 8. *Rivermouths.* Southampton. Bayonne.

Tribe X. *AVENACEÆ.*

880. AIRA.

A. *Awn geniculate, clubbed. Knee bearded.*

1. **canescens.** L. convoluto-setaceous. Ligule oblong, truncate. **p.** 7. *Sand.* e. Eng. Fr. G. *Shores* of Ticino.

2. **articulata.** L. flat, convolute when dry. Ligule oblong, subacute. **p.** 5. *Sandy coasts* of Mdt.

B. *Awn geniculate, not clubbed nor bearded, sometimes wanting.*

i. *Outer Pale ending in two long, rough points.*

3. **præcox.** Pan. somewhat spike-like. Flts. nearly equal. L. setaceous. **a.** 4–6. *Sand. very rare in* Sw. and n. It. *Not in s. It.*

4. **multiculmis.** "Densely tufted. Culms simple. Pan. contracted. Flts. shorter than the glume; the upper one stalked. **a.** *Bogs.* Utrecht. Belg."—Lejeune. *Has the habit of* A. canescens *and the Fl. of* caryophyllea.

5. **caryophyllea.** Pan. trichotomous, branched, at last divaricate. Flts. included in calyx, hairy at base; each with a geniculate awn, exceeding glume. L. setaceous. **a.** 5, 6. *Sand or gravel.*

6. **capillaris.** Panicles trichotomous: branches capillary; (secondary long. Glumes entire, obtuse, Parl.,) spreading. Flts. included, sessile, without hairs; the upper one alone awned. **a.** 4, 5. *Dry.* Hyères. Cors. Italy.

7. **cupaniana.** "Panicles trichotomous: branches capillary, spreading; secondary very short. Glumes erose, obtuse, but often with acumen. Fl. included, the upper alone awned. Awn nearly twice as long as calyx. **a.** 4, 5. *Calc. hills and sandy shores.* Sic."—Parl.

ii. *Outer Pale denticulate, (not bifid,) about as long as glume.*

8. **flexuosa.** Pan. spreading. Outer Pale hardly nerved, with a tuft of strong hairs at base. Awn nearly from base. Stalk of inner Flt. not one-fourth as long as floret. L. setaceous. **p.** 6, 7. *Hill pastures.*

9. **uliginosa.** Panicle erect, spreading. Outer Pale awned near the base. Stalk of inner Flt. about half as long as floret. L. very narrow, flat or folded. **p.** 8, 9. *Boggy.* e. Friesland. Westph.

10. **alpina.** Pan. dense, suberect. Stalks smooth. Awn from near the tip of outer pale, short, or included. L. involuto-subulate. Sheaths quite smooth. **p.** 6, 7. *Very high.* Mountains of Clova. Ben Lomond. *Shore,* Dundee.

C. *No awn.*

11. **Tenorii.** Pan. trichotomous: branches divaricate. Outer Pale hard, rough, nerveless, nearly entire, about equalling obtuse membranous glume. **a.** 4, 5. *Dry hills.* It.

12. **minuta.** Pan. trichotomous, widely spreading. Outer Pale firm, with strong rough nerves, denticulate, about equalling glume. **a.** 3. *Dry.* Rome. Flor. Cors.

13. **globosa.** Pan. compact, erect. Glumes smooth, hemispherical. Outer Pale hairy and lacerate at top, scariose, without nerves. Culm erect. **a.** 4, 5. *Sand.* Dax. Fréjus. Toulon.

14. **agrostidea.** Pan. lax. Outer Pale scariose, nerveless, slightly 3-lobed, otherwise entire, hairless. Culm geniculate, creeping. **a.** 4, 5. *Moist grassy.* Britt. Anjou. Fontainebleau.

15. **insularis.** "Pan. much branched, diffuse: branches somewhat trichotomous, capillary, spreading. Glumes rather lax, erecto-patent in the flower; in fruit nearly twice as long as seed. Anthers short. Culm geniculate at base, creeping. L. flat. **a.** 6, 7. *Mountain pools.* Sic."—Parl.

Doubtful.

16. **oryzetorum.** Pan. erect. Flts. 3, smooth, with a very short awn, exceeding calyx. Ligule truncate, very short. **p.** ? 6. *Rice-grounds.* Verona, *very rare. Pollini thinks it may be a var. of* Festuca elatior.

17. **Lagascæ.** "Pan. lax, trichotomous, capillary, somewhat fastigiate. Flts. awnless, shorter than the keeled glumes. **a.** Cors. ?"—Kunth.

881. DESCHAMPSIA.

1. **cæspitosa.** Pan. diffuse, broadly pyrami-

dal. Awn short, from base of outer pale. Axis hairy. L. flat, very rough above. Root tufted. **p.** 6, 7. *Woods and moist meadows.*

✓ 2. **wibeliana.** Pan. diffuse, oblongo-pyramidal. Awn setaceous, equalling outer pale. L. flat, rather rough above. Root stoloniferous. **p.** 6, 7. *Wet sandy banks.* Elbe.

3. **juncea.** "Pan. spreading, very obtuse. Outer Pale villous at base, and awned, toothed at top; inner smooth, bifid."—KUNTH. "Glumes acute, about as long as truncate pale. Awn hardly equalling glumes. L. convoluto-setaceous."—DUBY. **a.** 6. *Dry.* Mtp. Sisteron. Gap. Sienna. Pisa.

882. LAGURUS.

✓ 1. **ovatus.** Root-L. and Spike woolly. **a.** 5. *Dry.* s. Eur.

883. TRISETUM.

✓ 1. **subspicatum.** Pan. spike-like. Glumes nearly equal, 1-nerved. Awn reflexed. Flts. 3, nearly sessile, rough, with a few hairs at the base. **p.** 7, 8. *Very high.* Sw. Sav. Pdm. Pyrenees.

2. **condensatum.** Pan. ovoid, contracted when in fruit. Glumes nearly equal; inner 3-nerved. Flts. 2–3, with a naked callus. Rachis hairy, but not bearded. Awn from above middle of pale, nearly straight. L. flat, hairless. **a.** 5, 6. *Dry hills and waysides.* Terrac. Sic.

✓ 3. **neglectum.** Pan. oblong. Glumes very unequal, the outer not being half the width of the inner. Flts. 4. Awn from about middle of pale, somewhat recurved. L. hairy. Root fibrous. **a.** 6. *Meadows and waysides.* Cors. s. It. Sic.

4. **parviflorum.** Pan. spreading, much branched. Spicules small, numerous, 2-flowered. Glumes very unequal. Axis hairless. Awn short, from near summit of pale. L. pubescent. **a.** 4, 5. *Open fields.* Pisa. Sic. Sardinia.

5. **myrianthum.** Pan. much branched. Spicules small, numerous. Glumes nearly equal: outer 1-nerved; inner 3-nerved. Flts. 2, with 2 tufts of very short hairs at base. Awn from middle of back. L. and Sheaths smooth externally. **a.** 6. *Fields.* Milan.—BERT.

✓ 6. **flavescens.** Pan. equal, diffuse. Glumes very unequal. Flts. about 3, exceeding calyx. Axis with a very short beard. Outer Pale 5-nerved. Root somewhat creeping. **p.** 6, 7. *Meadows.*

7. **argenteum.** Pan. equal, diffuse. Flts. about 3. Glumes rather unequal: outer 1-nerved; inner 3-nerved. Hairs of Axis about one-third as long as floret. Outer Pale 1-nerved. L. distich, smooth. Throats of Sheaths hairy. **p.** 7, 8. *High pastures.* Alps.

✓ 8. **distichophyllum.** Pan. equal, diffuse. Flts. about 2. Glumes rather unequal: both 3-nerved at base. Beard more than half as long as floret. Outer Pale 3–5-nerved. L. distich, somewhat downy. Throat of Sheaths hairless. **p.** 8, 9. *High pastures.* Alps.

9. **gracile.** "Rac. short, ovate, nearly simple. Spicules 3-flowered. Glumes shorter than florets. Axis with a dense, rather short, dirty-white beard. Outer Pale 5-nerved, villous from base to awn, which is fixed below middle of pale. Root-L. involuto-setaceous, smooth. Culm smooth. Root fibrous. **p.** 6. *Mountain pastures.* Sard. *An excellent species, by no means to be confounded with* T. distichophyllum."—BERT.

10. **Cavanillesii.** Pan. contracted, short. Glumes very unequal, 1-nerved and 3-nerved. Flts. 2. Callus and short Rachis with very long hairs. Pale hairless. Awn from above middle. **a.** 4. Monte Baldo. Vall. *Very rare.*

11. **villosum.** "Rac. compound, oblong, nodding, somewhat spreading when in flower. Spicules 2-flowered. Glumes unequal: outer 1-nerved; inner 3-nerved. Flts. about equalling calyx, with a silky, rather long beard on the base and axis; awned from above the middle. Sheaths and outside of L. hairless. *Culm villous.* Root creeping. **p.** 7. *Calc. rocks.* Monte Cornu. Rio Sacro."—BERT.

✓ 12. **tenue.** Pan. equal. Glumes 7–9-nerved. Flts. 3, exceeding calyx; lowermost awned at tip; others at the back. Root fibrous. **a.** *Dry fields.* s. Fr. s. G. n. It. *rare.*

884. AVENA.

A. Plant perennial. Glumes 1–3-nerved.
  i. Florets not so many as 5.
    a. Ligule long, acute, nearly entire. Sp. 1–4.
    b. Ligule very short, ciliato-lacerate. Sp. 5–10.

ii. Florets 5 or more, in a fully developed spicule. Sp. 11–15.

B. Plant perennial. Glumes 5–9-nerved. Sp. 16.

C. Plant annual. Glume 5–9-nerved.

i. Base of Outer Pale to middle covered with long hairs. Sp. 17–19.

ii. Base of Outer Pale hairless. Sp. 20.

A. *Plant perennial. Glumes* 1–3-*nerved.*

i. *Florets not so many as* 5.

a. *Ligule long, acute, nearly entire.*

1. **lucida.** Pan. contracted, nearly simple: longer branches 2-flowered. Flts. 2, bearded at base, and both awned from the middle. L. hairless externally. Upper Ligules acuminate, entire. Root fibrous. **p.** 6, 7. *Mountain meadows.* Monte Baldo. Mountains of Como.—Bert.

2. **pubescens.** Pan. erect: longer branches 2-flowered. Flts. about 3, exceeding calyx. Pale awned from middle, rough, *stained.* L. flat, hairy on both sides. Root somewhat creeping. **p.** 5, 6. *Calc. pastures. Not in s. Italy.*

3. **amethystea.** "Pan. racemose: longer branches 2-flowered. Glumes 3-nerved. Flts. about 2; the lower awned at one-third of its length from the base, thin and silvery at top. L. flat, hairy on both sides. *Glumes nearly twice as large as in* A. pubescens, *stained at the base.* **p.** 5. *Hills.* Monte Baldo. s. Tyrol."—Koch.

4. **Parlatorii.** "Pan. nearly simple, spreading when in flower. Spicules 2–3-flowered. Flts. all awned, rather shorter than calyx. Upper part of Keel of Glume serrulate, scabrous. Upper Pale with long cilia. L. rigid, long, hairless. Sheaths mostly hairless. Stems tufted. **p.** Col di Tende. Alps."—Parl. *This is the* A. setacea *of Parl., and according to him,* A. sempervirens *of Koch and Bert., but not of Villars.*

b. *Ligule very short, lacerate.*

5. **alpestris.** L. flat, hairy on both sides. Pan. compound: the lowest branches 3–6-flowered. Flts. 3–4, exceeding calyx. Outer Pale 5-nerved, hairy at base. **p.** 7, 8. *High pastures.* e. Alps. *A Trisetum, except for the bearded seeds.*

6. **sedenensis.** L. flat, short, hairless. Ligule truncate, not ciliate. Pan. compound. Spicules 2–3-flowered, with a rudiment. Flts. exceeding calyx. Upper Pale with very short cilia. Stems tufted. **p.** Canigou.—Parl. *I have a plant from the Cantal like this, except that the ligule is divided into dense short cilia.*

7. **setacea.** L. convoluto-setaceous, hairless. Ligules reduced to a short fringe round the ring at top of sheath. *Sheaths usually hairy.* Flts. 2–3, rather exceeding calyx. Outer Pale smooth. **p.** 7, 8. *High pastures.* Dau. Mont Ventous. *I have no doubt that this is the* A. setacea *of Villars, from its perfect correspondence with the description and figure of that author, and from the authority of M. Requien, in whose company it was gathered on Mont Ventous, and who is perhaps better acquainted with the plants of Villars than any other botanist. The nature of the ligule effectually separates it from the* A. setacea *of Parl. I do not see, however, how it differs from* A. striata, *whose character I give below.*

8. **striata.** "Pan. compound, erect, contracted, attenuate. Flts. 3: the two lower fertile, awned; the upper barren, with a short straight awn or none. Outer Pale shining, quite hairless, cloven at top. L. rigid, narrow, long, involute, quite smooth, except at the mouth of the sheath. Ligule very short, truncate, densly ciliate. Stems closely tufted. **p.**

β. *filifolia.* Sheaths covered with short retrorse hairs."—Parl.

9. **fallax.** Pan. compound, spreading, at last contracted. Flts. 3, all awned, somewhat exceeding calyx. Outer Pale rough; inner with short cilia. L. rigid, involute, hairless. Ligule very short, truncate, densely fringed. Stems tufted. **p.** 4, 5. *Dry hills.* Sic. s. It. *The L. of this and of* A. setacea, *and probably also of* A. striata, *break off very readily from the sheath, leaving the base of the plant covered with the truncate sheaths. Something of the same sort takes place in* A. sedenensis.

10. **sempervirens.** Panicled. Flts. 3, complete, woolly at base. L. rigid, acute, involute, evergreen. **p.** Vill. *None of the plants to which this name has been since given agree with the further description of Villars. He compares it to the* Arrhenatherum, *and says the stems are three or four feet high, and the root-L. a foot long, and so tough as to cut the fingers of one who gathers it incautiously. The upper floret is generally unproductive.*

ii. *Florets of fully-developed Spicules* 5 *or more.*

11. **planiculmis.** Pan. equal, long, con-

tracted: longer branches bearing 2 or 3 spicules. Glume 3-nerved. Flts. 5–6. L. hairless, rough on margin. Sheaths much compressed, 2-edged. **p.** 7, 8. *Springy.* Sil. Mor.

12. **alpina.** Pan. contracted, nearly simple: branches in pairs, rarely 2-flowered. Upper Glumes 3-nerved. Axis hairy. Flts. about 8, awned above middle. L. linear, very rough on upper surface. Sheaths terete. Root fibrous. **p.** 7, 8. *High mountains.* Clova. Carn.

13. **longifolia.** "Pan. erect, contracted. Flts. 5–8, exceeding unequal glumes. Axis with a few hairs. Outer Pale 7-nerved, acuminate, shortly bidentate, hairy at base. L. narrow, asper on upper surface. Ligules oblong, acuminate. **p.** *Pine-woods.* Narbonne." —Duby.

✓ 14. **pratensis.** Pan. contracted, nearly simple: longer branches sometimes bearing 2 spicules. Upper Glumes 3-nerved. Axis bearded. Flts. 4–5, awned from the middle. L. rough on upper surface. Sheaths smooth. Culm with one joint. Root fibrous. **p.** 6, 7. *Dry meadows.*

✓ 15. **versicolor.** Pan. subovate, nearly simple: the branches bearing 1 or 2 spicules. Upper Glume 3-nerved. Axis hairy. Pales asper. L. flat; upper surface nearly smooth. Ligule oblong, subacute. Root fibrous. **p.** 7, 8. *High pastures.* Alps. Mountains of Carrara.

B. *Plant perennial. Glumes* 5–9-*nerved.*

16. **alba.** Pan. erect, lax, narrow. Flts. 2, only one of them awned. Inner Glume obtuse, as long as pale. Pale 7-nerved, acuminate, with short hairs at base. **p.** Prades. —Duby. *Appearance of* A. sativa, Vahl.

C. *Annual. Spicules drooping after flowering. Glumes* 5–9-*nerved.*

i. *Base of Outer Pale, as far as middle, covered with long hairs.*

✓ 17. **sterilis.** Pan. 1-sided. Flts. 4–5, falling short of calyx; the 2 lower awned and hairy; upper awnless and smooth. **a.** 7. *Corn.* It. Istria.

✓ 18. **fatua.** Pan. diffuse, equal. Flts. about 3, falling short of calyx; all hairy and awned. Outer Pale ending in lanceolate, finely acute divisions. Root fibrous. **a.** 6, 7. *Corn.*

✓ 19. **hirsuta.** Pan. one-sided. Flts. 2–3, very hairy, as long as calyx, with a geniculate, dorsal awn, and two long setiform teeth. Root fibrous. **a.** 5, 6. *Corn. Roofs.* s. It. Sic.

ii. *Base of outer Pale smooth.*

20. **strigosa.** Pan. one-sided. Flts. about 3, as long as calyx; each with 1 awn and 2 long setas! Awn dorsal, generally very long. **a.** 7, 8. *Escapes from cultivation.*

Besides these, we find in field cultivation, and occasionally escaping, but not maintaining themselves, the following annuals:—

21. **orientalis.** Pan. secund. Flts. 2, falling short of the glume. Pale indurated.

22. **nuda.** Pan. secund. Flts. 3, exceeding glume. Pale membranous.

23. **brevis.** Pan. secund. Flts. 2, exceeding glume. Flts. obtuse!

24. **sativa.** Pan. spreading all round.

885. GAUDINIA.

1. **fragilis.** Culm branched. Sheaths and L. pubescent. Spicule solitary, 5–7-flowered, smooth. **a.** 6, 7. *Dry.* s. Eur. ✓

886. ARRHENATHERUM.

1. **avenaceum.** Pan. diffuse. Upper Flt. with a short, straight awn. Root knobby. L. harsh. Glumes unequal, smooth. **p.** 6–8. *Uncult.* ✓

2. **Thorei.** Pan. erect. Upper Flt. awnless. Axis hairy. Outer Pale pubescent, acuminate, entire. L. convolute, rigid, very long. Knobs and lower Sheaths downy. **p.** *Dry heaths.* Dax. ✓

887. HOLCUS.

1. **lanatus.** Pan. equal. Awn of barren Flt. recurved, included in calyx. Root fibrous. **p.** 5–7. *Meadows. Not in s. It.* ✓

2. **mollis.** Pan. equal. Awn of barren Flt. geniculate, protruded. Root creeping. **p.** 7. *Shade.* ✓

888. DANTHONIA.

1. **decumbens.** Awn short, straight. Pan. nearly simple, contracted, few-flowered. Spicules 3–4-flowered. Cal. about as long as Flts. L. and Sheaths hairy. **p.** 6, 7. *Barren pastures. Not in s. It.* ✓

2. **provincialis.** Awn long, twisted. Flts. 5–6. L. smooth, throat hairy; lower convoluto-setaceous. **p.** 6, 7. *Hill pastures.* Gap. Sisteron. Carin. Carn. ✓

Tribe XI. *FESTUCACEÆ.*

[*Sesleria, Sclerochloa, Dactylis, Festuca,* some species of *Melica,* and a few also of *Poa,* have a one-sided panicle; *Cynosurus* has a one-sided spike; *Oriochloa* a 2-rowed spike.]

889. KOELERIA.

A. *Florets awnless. Panicle spike-like.*

1. **cristata.** Pan. branched, oblong, interrupted at base, nearly smooth. Flts. 2–4. Outer Pale very acute. Culm smooth. L. flat, the lower ciliate. Sheaths not dividing. **p.** 7. *Dry grassy. Not in Sic.*

2. **glauca.** Pan. interrupted at base, hairless. Spicules 2–3-flowered. Outer Pale obtuse, sometimes mucronate. Culm nearly smooth, far exceeding sheaths. L. flat, hairless. **p.** 6, 7. *Sandy fields.* G. *occ.*

3. **grandiflora.** "Rac. compound, somewhat interrupted at base. Spicules ovato-oblong. Glumes (and outer Pale, PARL.) acuminate, rather shorter than florets. Culm bulbous at base. *L. often broader than in* K. cristata, *and the Spicules nearly twice as large.* **p.** 6, 7. It. *occ.*"—BERT.

4. **albescens.** Pan. linear, interrupted. Base sheathed, or nearly so, in the upper L. Spicules 2–3-flowered, acuminate. L. pubescent, convoluto-setaceous. *Var. of Sp.* 1? **p.** 7. *Sand.* Toul. Bord. Anjou. Fontainebleau.

5. **valesiaca.** Spicules in groups, nearly sessile, 2–3-flowered. Glumes ciliate on keel. Pales acuminate. Lower L. convoluto-setaceous, hairless. Culm far exceeding sheath, smooth below, downy above. **p.** 4, 5. *Borders and open hills.* lower Vallais. Pdm.

β. setacea. Lower Pale villoso-ciliate on the back.

B. *Pales awned from below the tip. Glumes nearly equal.*

6. **hirsuta.** Pan. subovoid, somewhat interrupted at base. Spicules 2–3-flowered, hirsute. L. very narrow, somewhat convolute, smooth. Culm tomentose at top. **p.** 7, 8. *Meadows.* Alps.

7. **villosa.** Pan. cylindrical. Spicules crowded, on short erect, hairy, branched stalks, 2-flowered, villous on back, acuminate; the second Flt. abortive in the lower spicules. L. flat, soft, villous. **a.** 6. *Sandy shores.* Mdt.

8. **Linkii.** "Pan. spike-like, somewhat interrupted. Glumes about 3-flowered, rather exceeding florets. Keel of Glumes and of obtuse outer Pale fringed with long hairs. Awns exceeding glume. L. flat, pubescent. Culm pubescent above. **p.** s. Fr."—KUNTH: *not in Duby.*

9. **hispida.** Pan. ovato-cylindrical. Spicules 3–4-flowered. Glumes and outer Pale bristly at top. Awn rigid, as long as floret. L. flat, hairy. Culm hairless. **a.** 5. *Coasts.* Tusc. Sicily.

10. **phleoides.** Pan. cylindrical. Spicules crowded on erect, branched, hairless stalks, 3–5-flowered. Outer Pale rough and somewhat hairy. Awn soft, hardly one-fourth as long as floret. L. flat, hairy. Culm hairless. **a.** 5, 6. *Sandy coasts.* Mdt.

11. **brachystachya.** Pan. ovoid. Spicules 5–8-flowered. Outer Pale smooth. L. flat, pubescent. Culm hairless. **a.** *Shores.* Languedoc.

12. **cærulescens.** Pan. spike-like. Spicules crowded, 4–5-flowered. Outer Pale with a very short awn. Culm knotty at base, coated with withered fibres. **p.** 5, 6. *Calc. mountains.* Sic.

C. *Outer Glume very much smaller.*

13. **macilenta.** Pan. slender, lax. Spicules 3–4-flowered, smooth, shining, somewhat awned. Inner Pale not half as long as outer. **a.** 5. *Sandy shores.* Mdt.

890. SCHISMUS.

1. **calycinus.** Pan. contracted. Glumes exceeding linear spicules. L. bearded at base. **a.** 6, 7. Prov. Rous.

891. MELICA.

A. *Outer Pale of lower Floret with long hairs.*

1. **ciliata.** Pan. equal, spike-like: branches erect. Outer Pale of lower Flt. ciliate on its whole length. Back rough, not hairy. (Upper Pale shortly ciliate on keel. L. flat. Culm tall, solitary, PARL.) **p.** 5. *Walls and rocks.* s. Eur.

2. **Bauhini.** Pan. simple: lower branches spreading. Spicules secund. Outer Pale of lower Flt. ciliate to above middle, not at top. Back scabrous. **p.** 5, 6. *Rocky.* mdt. Fr. Nice. Sic. *Panicle much less dense than in Sp.* 1.

3. **Cupani.** Pan. thin, secund: branches

erect; the upper simple. Spicules of 1 fertile floret. Outer Pale densely hairy all over. L. narrow, involuto-setaceous when dry. **p.** 5, 6. *High rocks.* Nebrodes.

4. **nebrodensis.** "Pan. straight, lax, secund, nearly simple. Outer Pale of lower Flt. ciliate, for its whole length. Back hairless, tuberculato-scabrous. Inner Pale with rather long cilia on keels. Culms short, tufted. L. involute, hairless. Sheaths hairless. **p.** 5, 6. *High calc.* Nebr."—PARL.

B. *Outer Pale not bearded.*

✓ 5. **nutans.** Pan. compressed, one-sided, nearly simple. Spicules nodding, beardless, with two complete florets. Glumes obtuse. **p.** 6. *Shady hills. Not in s. It.*

✓ 6. **minuta.** Rac. nearly simple. Spicules nodding, beardless, with 2 complete florets. Glumes acute, falling short of florets. Culm branched. L. very narrow, convolute. Ligule long. **p.** 4, 5. *Walls and calc. rocks.* s. Fr. Liguria. Rome. Sic.

✓ 7. **ramosa.** Pan. compound at base, pyramidal. Spicules with 2 complete florets. Glumes acute, rough, subciliolate; the inner exceeding florets. L. very narrow, convolute when dry. **p.** 5, 6. *Walls.* Rome.

8. **pyramidalis.** Pan. many-flowered, scattered, pyramidal. Branches horizontal. Spicules with 2 complete florets. Glumes acute, falling rather short of florets. Culm nearly simple. Ligule short, truncate, lacerate. **p.** 5. *Dry stony hills.* Massa. Tusc. Rome. Sic.

✓ 9. **uniflora.** Pan. branched, 1-sided. Only 1 complete floret. **p.** 5, 6. *Shade.*

892. MOLINIA.

✓ 1. **cærulea.** Pan. rather contracted. Spicules erect, awnless, about 3-flowered. Pale 3-nerved, acute, hairless. Culm nearly naked. **p.** 8. *Peaty.*

✓ 2. **serotina.** Pan. spreading. Flts. 2–5, somewhat awned. Pale 5-nerved. Culm covered with the sheaths. **p.** 8, 9. *Limestone hills.* mdt. Fr. s. Sw. It. Sic.

893. CATABROSA.

✓ 1. **aquatica.** Pan. equal, diffuse. Spicules linear, generally 2-flowered. **p.** 5, 6. *Water.*

β. Some of the Spicules 1-flowered. *Sands within reach of tide.* Lancashire. Cumray.

894. SESLERIA.

1. **cærulea.** Bracts undivided. Spike ovali-oblong, slightly one-sided. Spicules 2–3-flowered. Outer Pale with 2–4 setas, and an intermediate awn, not half as long as pale. L. linear, flat. Ligule short, truncate. **p.** 4, 5. *Calc. pastures.* ✓

2. **tenuifolia.** Bracts undivided. Spike oblong. Spicules about 3-flowered. Outer Pale with 2–4 setas and an intermediate awn, not half so long as pale. L. narrow linear, channeled: the Sheaths at last dividing into a net-work of fibres. **p.** 5. *Shores.* Trieste. Fiume. It.

3. **elongata.** Bracts undivided. Spike long, cylindrical. Spicules about 3-flowered. Outer Pale with 2–4 setas, and an intermediate awn, not half as long as pale. L. linear, channeled. Sheaths not dividing, cloven at top. **p.** 8, 9. *Dry meadows.* s. e. G. It. ✓

4. **nitida.** "Bracts undivided. Spike oblong. Spicules about 4-flowered. Glumes acuminato-aristate, exceeding florets. Lateral Teeth of outer Pale mucronato-aristate; middle awned. L. flat, rigid, acute, with a rough margin. **p.** 5–7. *Stony.* K. Nap. Sic."—PARL.

5. **tenella.** Spike ovoid. Bracts palmato-dentate. Spicules 2-flowered. Awns of outer Pale 5; central one as long as pale. Squamules 0. **p.** 6–8. Alps of Salzburg. Valtellina.

6. **sphærocephala.** Spike subglobose. Bracts ovate, dentate. Spicules about 3-flowered. Outer Pale with 1 nerve and a single awn. **p.** 7, 8. *Rocks.* Alps of Salzb. Lake of Como. Tyrol. Mont Cenis. ✓

895. OREOCHLOA.

1. **disticha.** Spike ovoid. Spicules 3–6-flowered. Lower Pale awnless, but with a small point. L. filiform. **p.** 7, 8. *Very high.* Pyr. Alps. ✓

896. POA.

A. Panicle one-sided. Culm 2-edged. Sp. 1, 2.

B. Pan. nearly equal. Culm terete.

i. Root creeping.

a. Florets connected by a web (*in* P. nemoralis *sometimes wanting*). Sp. 3–8.

b. Florets unconnected. Sp. 9, 10.

ii. Root not creeping.

a. Branches of Panicle semiverticillate. Sp. 11–16.

b. Branches solitary or in pairs.

* Florets connected by a web. Sp. 17–19.

** Florets unconnected. Sp. 20–24.

C. Panicle trichotomous! Glumes nerveless, scariose! united! Sp. 25.

A. *Panicle one-sided. Culm 2-edged.*

1. **polynoda.** "Pan. erect, ovato-lanceolate. Flts. 4–5, without a web. Outer Pale 5-nerved. Uppermost Joining above middle of stem. Ligule prominent, obtuse. **p.** 6, 7. *Dry stony.*"—Bab.

2. **compressa.** Pan. spreading when in flower. Florets 5–7, slightly webbed. *Outer Pale 3-nerved.* Uppermost Joining at about middle of stem. Ligule short, obtuse. **p.** 7. *Dry.*

β. *subcompressa.* Outer Pale 5-nerved.

γ. *langeana,* Rchb. Habit of *trivialis.*

B. *Panicle equal. Culm terete.*

i. *Root creeping.*

a. *Florets connected by a web.*

3. **pratensis.** Pan. diffuse: branches semiverticillate, rough. Spicules ovate, 3–5-flowered. Outer Pale with 5 prominent nerves. Culm and Sheaths smooth. Ligule truncate. **p.** 5, 6. *Grass. Not in Sic.*

4. **Nymanni.** "Pan. spreading when in flower: branches rough. Spicules oval, 2–3-flowered. Glumes and Pales exquisitely nerved. Keel aculeato-scabrous. L. narrow, smooth on margin: those of the barren shoots distich. Sheaths compressed, with asperities pointing upwards. Upper Ligule short, truncate. Root somewhat creeping. **p.** 6, 7. *Sandy hills.* Nicolosi. *Between* pratensis *and* trivialis."—Guss.

5. **nemoralis.** Pan. spreading: branches verticillate, rough. Spicules elliptico-lanceolate. Flts. 2–5. Marginal Nerves hairy at base. Nerves of outer Pale not very distinct. Upper Knot about or above middle of stem. Culm and Sheaths smooth. Ligule very short. Root somewhat creeping. **p.** 6, 7. *Woods. Koch considers the form having a lax nodding panicle and 2-flowered spicules as the type; and mentions the following varieties:—*

β. *firmula.* Culm nearly erect. Panicle spreading. Florets free.

γ. *coarctata.* Culm rigid, erect. Pan. contracted. Flts. webbed.

δ. *pratensis,* Leers. Culm and Sheaths rough.

ε. *glauca.* Glaucous. Differs from *P. cæsia* in having the culm leafy above the middle.

ζ. *montana.* Spicules few and large, not above 2 or 3 on a branch of the panicle.

To these we may add

η. *Parnellii,* Bab. Upper Sheaths usually longer than L.

6. **Balfourii.** Panicle rather spreading: branches verticillate. Spicules ovate. Flts. 3 or 4, webbed. Outer Pale with 5 nerves; the marginal nerves hairy. Upper Knot at not more than one-third of height of culm. Ligule prominent, obtuse. **p.** 7. *Tops of mountains.* Sc. and n. E.—Bab.

7. **miliacea.** "Pan. effuse. Pales quite smooth, truncato-denticulate. L. narrow, short, smooth. Ligule rather long, obtuse. **p.** *Hills.* Briançon, Sw. *Differs from* P. nemoralis *in the truncato-denticulate summit of the outer pale.*"—Kunth.

8. **cenisia.** Pan. oblong: branches semiverticillate, nearly smooth, filiform, bearing flowers almost from the base. Spicules ovato-lanceolate, 3–5-flowered. Pale ciliate, silky. Lower Ligule truncate; upper oblong. **p.** 7, 8. *Very high.* Pyr. Alps.

b. *Florets unconnected by a web.*

9. **montana.** "Pan. erect, close, slender. Spicules few, lanceolato-ovate, 2–3-flowered. Outer Pale with 5 nerves, of which the dorsal and marginal are hairy. Upper Sheath not longer than its L. Ligule prominent, obtuse. Uppermost Knot about the middle of the stem. **p.** 6. Ben Lawers."—Bab.

10. **ætnensis.** "Pan. equal, narrow, somewhat secund. Spicules lanceolate, 2–3-flowered. Glumes and Pales lanceolate, acute, 5-nerved. L. compressed, short. Culm and sheaths nearly smooth. Ligule short, acute. **p.** 6, 7. *Sandy woods.* Ætna."—Guss.

ii. *Root not creeping, the new shoots in the perennial species coming up close to the old.*

a. *Branches of Panicle semiverticillate.*

11. **sudetica.** Pan. oblong, diffuse. Spi-

cules ovato-oblong. Flts. 3–5, sometimes connected by a web, otherwise hairless. Outer Pale with 5 prominent nerves. Sheaths compressed. L. boat-like at the end. Shoots much compressed. **p.** 6–8. *High shade.* Fr. G. Switzerland.

✓ 12. **hybrida.** "Pan. diffuse: branches rough. Spicules ovato-oblong, 3–5-flowered. Outer Pale *somewhat woolly* at base, with 5, prominent, hairless nerves. L. gradually and finely acute, on a linear base. Sheath 2-edged. Ligule short. Sterile bundles of L. distich, much compressed. **p.** 6, 7. *Moist woods.* Jura. Salzburg. Tyr. Sty."—Koch.

13. **trivialis.** Pan. diffuse: branches rough. Spicules ovate. Flts. about 3, connected by a web. Outer Pale with 5 prominent nerves. Marginal Nerves nearly hairless. Culm and Sheaths rough. L. finely acute. Upper Ligule oblong, acute. Root fibrous. **p.** 6–8. *Grass and waysides.*

✓ 14. **fertilis.** Pan. diffuse: branches rough. Spicules ovato-lanceolate, 2–5-flowered, obscurely nerved. Outer Pale marked at the base, back, and margin with silky lines. Ligules oblong, acute. Root fibrous. **p.** 6, 7. *Moist.* m. Europe.

15. **concinna.** Panicle ovoid. Spicules ovate, acute, about 10-flowered. Pale silky on back. Nerves obsolete. Flts. not connected by a web. Culm bulbous at base. Upper Ligule oblong. Root fibrous. **p.** 4, 5. Sion and Branson in the Vallais.—Gaud.

16. **Bivonæ.** "Pan. diffuse: branches smooth. Spicules smooth, obtuse, 5–7-flowered. Glumes acute. Outer Pale obtuse, 3-nerved: keel subdenticulate. Culms somewhat tufted. Ligule oblong. Root fibrous. **p.** *Moist sandy.* Ætna."—Parl.

b. *Branches of Panicle single or in pairs.*

* *Florets connected by a web.*

✓ 17. **bulbosa.** Panicle oval, spreading: branches rough. Spicules ovate, 4–7-flowered. Nerves of outer Pale very short. Culm bulbous at base. L. finely serrulato-asper. Upper Ligule oblong. Root fibrous. **p.** 5. *Sandy. The spicules frequently become viviparous.*

✓ 18. **minor.** Pan. contracted, subracemose, nodding: branches capillary, nearly smooth. Spicules ovato-oblong, 4–6-flowered. Outer Pale silky, ciliate. Nerves obsolete. Margin of L. serrulato-asper. Lower Ligule short; upper oblong, acute. Culm not bulbous at base. Root fibrous. **p.** 7, 8. *Very high.* Sw. *very rare.* Salzb. Carin.

19. **laxa.** Pan. contracted, subracemose, nodding: branches capillary, smooth. Spicules ovate, about 3-flowered. Outer Pale 3-nerved, silky at base, and the dorsal and marginal nerves hairy. Margin of L. smooth. Ligule oblong, subacute. Root fibrous. Web sometimes wanting. **p.** 7, 8. *High.* Alps. Pyr. Harz. Sc. ✓

** *Florets not connected by a web.*

20. **annua.** Pan. spreading, smooth, at length deflexed. Spicules ovato-oblong, 3–7-flowered. Outer Pale 5-nerved, obtuse, hairy at base. Culm slightly compressed. Ligules obtuse; the lower very short. **a.** All the year. *Uncult.* ✓

21. **cæsia.** Branches erect, slender. Spicules ovate. Flts. 2–5. Marginal nerves of outer Pale hairy. Uppermost Knot almost at base of stem. Upper Sheath not longer than its L. Ligules short, obtuse. **p.** 7. *Mountains.* Wales. Sc.—Bab. Alps.

22. **alpina.** Pan. oblong: branches capillary. Spicules broadly ovate, 4–10-flowered. Outer Pale 3-nerved, silky at base. Lower Ligules short; upper oblong. **p.** 6, 7. *High pastures.* ✓

23. **pumila.** Pan. erect: branches and branchlets rough, spreading nearly at right angles. Spicules ovate, 4–6-flowered. Flts. densely pubescent. All Ligules oblong, acute. Root fibrous, tufted. **p.** 5, 6. *Mountain pastures.* Carn.

24. **rariflora.** Pan. few-flowered, diffuse: branches rough. Spicules elliptico-oblong. Flts. 3–5, villous at base. Outer Pale 5-nerved. Culms cespitose, branched, creeping at base, smooth. Sheaths much shorter than joints. L. rough on the margin. Ligules short, rounded. **p.** Fr.—Kunth.

C. *Panicle trichotomous. Glumes nerveless, scariose, united!*

25. **divaricata.** Pan. capillary: ultimate branches clubbed. L. filiform. **a.** 4, 5. *Clayey shores,* Sic. *Sandy,* mdt. Fr. *Ought, perhaps, to form a distinct genus.* ✓

879. ERAGROSTIS.

1. **megastachya.** Panicle spreading: branches solitary or in pairs; lower hairy at ✓

base. Spicules lineari-oblong. Flts. 15–35, obtuse, with a short point. Sheaths smooth. Root fibrous. Seeds reticulate. **a.** 6. *Woods and sandy, cult. and uncult.* s. Eur.

2. **poæformis.** Pan. spreading: branches solitary or in pairs; lower branches hairy at base. Spicules ovato-oblong. Flts. 9–19. Sheaths hairy. Root fibrous. **a.** 6–8. *Sandy uncult.* s. Eur.

3. **pilosa.** Pan. contracted when in flower. Branches semiverticillate; lower hairy at base. Spicules linear. Flts. 5–13, acute. Lateral nerves of outer Pale rather indistinct. Sheaths smooth. Root fibrous. **a.** 7–9. *Sandy cult.* s. Eur. *There seem to be two var. In one, the branches are semiverticillate, and not immediately subdivided; in the other, the branches are never more than two together, but, being immediately subdivided, have a semiverticillate appearance.*

4. **leersioides.** "Panicle contracted: branches smooth. Spicules 2–4-flowered. L. flat, exceeding panicle. Sheaths hairless. Culm erect. Root fibrous. **a.** 6. *Sandy shores.* Palermo."—Guss., *from* Presl.

5. **triticea.** "Pan. simple, spike-like. Rachis with one nerve, flattened below. Spicules sessile, oval, 6-flowered. Pale 3-nerved. Ligule exsert. L. flat. Culms diffuse. **a.** 5. *Fields.* Palermo."—Guss., *from* Presl.

898. GLYCERIA.

1. **aquatica.** Pan. equal, diffuse, much branched. Spicules linear, 5–9-flowered. Root creeping. **p.** 7, 8. *Water.*

2. **fluitans.** Panicle 1-sided, very long, slightly branched. Spicules linear, 7–11-flowered. Root creeping. **p.** 6–9. *Water.*

β. plicata. "Branches of Pan. semiverticillate. Young L. many times folded."—Koch. (Width of outer Pale half the length, Bab.)

899. SCLEROCHLOA.

A. *Outer Pale subtruncate, nearly cylindrical.*

i. *Nerves indistinct thickenings towards the top of the pale.*

1. **maritima.** Pan. contracted when in fruit. Spicules linear, about 5-flowered. Outer Glume 1-nerved; inner obscurely 3-nerved. Plant with long barren runners. **p.** 7. *Salt marshes.*

2. **distans.** Lower branches of Pan. long, deflexed or horizontal. Spicules linear, about 5-flowered. Outer Glume 1-nerved; inner obscurely 3-nerved. Lateral nerves of outer Pale ciliate at base. Plant without runners. **p.** 7. *Saltish pastures.*

3. **Borreri.** Panicle rather spreading: branches suberect when in fruit. Outer Glume with 1, inner with 3 nerves. Flts. 3–6. Outer Pale often rather acute, not ciliate at base. No runners. L. flat. **p.** 6. *Salt marshes.* Hampshire.

4. **convoluta.** Pan. somewhat contracted: branches erect. Outer Glume with 1, inner with 3 nerves. Flts. 6–8. Outer Pale with a silky fringe at base of lateral nerve. L. smooth, involuto-setaceous. No runners. **p.** *Salt.* Mars.

ii. *Nerves* 5, *formed of very distinct thickenings.*

5. **procumbens.** Pan. ovato-lanceolate. Glumes rigid; outer with 1, inner with 3 nerves. Flts. about 4. Outer Pale firm and rigid. L. flat. No runners. **a.** 7, 8. *Dry banks in salt marshes.*

6. **dura.** Pan. secund, very compact. Spicules 3–5-flowered. Glumes very unequal, both 3–5-ribbed, rigid. Outer Pale very firm and rigid. **a.** 6. *Dry.* Fr. G. It.

B. *Outer Pale acute or mucronulate.*

i. *No distinct nerve.*

7. **rigida.** Pan. rigid, compressed. Spicules in 2 rows, adpressed, linear, 5–11-flowered. Pale rather obtuse, with a minute point. Root fibrous. **a.** 6. *Walls and dry banks.*

β. hemipoa, Guss. Outer Pale acute, pointless. L. at last convolute.

ii. *Outer Pale with* 3 *well-defined nerves. Intermediate spaces even.*

8. **loliacea.** Spike simple or somewhat branched at base, linear. Spicules in 2 rows, erect, 8–12-flowered. Outer Pale somewhat boat-shaped, subobtuse. Root fibrous. **a.** 6, 7. *Gravelly shores.*

9. **Triticum.** Spikes in a wide-spreading raceme. Branches divaricate, solitary or in pairs. Spicules lanceolate. Glumes 3-nerved. Axis quite smooth. Culm geniculate, branched at base. **a.** 5, 6. *Sandy shores.* Mdt.

10. **divaricata.** Spikes in a wide-spreading raceme. Branches divaricate, rather crowded.

Spicules linear or somewhat cuneate, compressed. Glumes 1-nerved. Axis asper. Culm geniculate, branched. **a.** 5. *Sandy shores.* Lig. Terracina. Sic.

900. BRIZA.

✓ 1. **maxima.** Spicules oblongo-cordate, 9–17-flowered, drooping. **a.** 5. *Dry hills.* s. Europe.

✓ 2. **media.** Pan. erect. Spicules at last cordate, 5–9-flowered. Cal. smaller than floret. Ligule blunt, short. **p.** 6. *Dry grass. Not in Sic.*

3. **virens.** "Spicules ovate, 7-flowered. Cal. as long as floret. **a.** s. Eur."—Kunth. *Not in the national floras.*

✓ 4. **minor.** Pan. erect, much branched, diffuse. Spicules triangular, 7-flowered, shorter than calyx. Ligule lanceolate, very long. **a.** 6. *Cult.* E. *rare.* Fr. Vevay. It.

901. CYNOSURUS.

✓ 1. **cristatus.** Pan. linear, spike-like. Spicules mucronate. Neutral Flts. lanceolate, unarmed. **p.** 6, 7. *Dry grass.*

✓ 2. **echinatus.** Pan. ovoid, compressed, dense. Spicules with long awns. Neutral Flts. lanceolate, each with a long seta. **a.** 7, 8. *Warm uncult.* Fr. s. Sw. It.

✓ β. *giganteus*, Ten. Spicules 3-flowered.

✓ 3. **elegans.** Pan. ovoid, somewhat diffuse. Outer Glume awned. Neutral Flts. setiform, on an ovate base. **a.** 4–6. *Shady hills.* Cors. s. It. Sic.

✓ 4. **aureus.** Glumes remote from lower floret. Pale of neutral Flts. ovato-subrotund! **a.** 3, 4. *Rocks and walls.* Coasts of Mdt. *rare.*

902. DACTYLIS.

✓ 1. **glomerata.** Branches distant, naked at base. Spicules crowded, 3–6-flowered. L. keeled. **p.** 6–8. *Meadows, &c.*

✓ β. *hispanica*, Roth. Pan. almost crowded into a single head. Spicules 3-flowered.

γ. *glaucescens*, Willd. Glaucous. Florets sometimes as many as eight.

littoralis
repens

903. FESTUCA.

A. Glumes very unequal. Outer Pale finely tapering into a seta.

- **i.** Outer Glume very minute; inner setigerous. Sp. 1–4.
- **ii.** Outer Glume about half as long as inner.
  - **a.** Inner setigerous. Sp. 5.
  - **b.** Inner not setigerous.
    - * Equalling or exceeding Pale. Sp. 6–9.
    - ** Shorter than Pale. Sp. 10–12.

B. Glumes not very unequal. Outer Pale acute, or with a seta shorter than itself.

- **i.** Ligule with rounded auricles. Sp. 13–18.
- **ii.** Ligule without rounded auricles.
  - **a.** L. setaceous. Sp. 19–21.
  - **b.** L. flat.
    - * Awn short or wanting.
      - † Ligule oblong.
        - ‡ Seeds hairy at top. Sp. 22–27.
        - ‡‡ Seeds without hairs. Sp. 28–30.
      - †† Ligule very short. Sp. 31–33.
    - ** Awn twice as long as Pale. Sp. 34.

A. *Glumes very unequal. Floret tapering into a seta longer than itself. Monandrous?*

i. *Outer Glume very small.*

1. **uniglumis.** Pan. erect, spike-like, nearly simple. Stalks cuneate. Outer Glume scariose; inner as long as floret, setigerous. ✓ Pale asper towards the tip, hairless. Culm when in flower almost inclosed in the sheath. **a.** 5, 6. *Sandy.* m. and s. Eur. *occ.*

2. **Alopecurus.** Pan. erect, somewhat spike-like. Stalks enlarged upwards. Outer Glume membranous; inner as long as floret, ✓ setigerous, membranous. Pale smooth, copiously ciliate. **a.** 5, 6. *Sandy shores.* Tusc. Rome. Nap. Sic.

3. **ciliata.** Pan. long, branched at base, spike-like. Stalks of Spicules thickened upwards. ✓ Glumes scariose, not setigerous; inner much shorter than floret. Pale ciliate, asper, or hairy. **a.** 5, 6. *Warm sandy.* Bord. mdt. Fr. Istria. It.

4. **ligustica.** Pan. much branched, spreading when in flower. Stalks enlarged upwards, appearing as if surrounded by an inflated membrane. ✓ Outer Glume scariose; inner setigerous, equalling floret. Pale hairless. **a.** 5. *Walls; uncult.* s. Fr. It.

ii. *Outer Glumes about half as long as inner.*

a. *Inner setigerous, about as long as floret.*

5. **geniculata.** Pan. straight: branches, when in flower, erecto-patent, short. Stalks ensiform. Outer Pale as long as its awn, much longer than the inner. Culm geniculate at base. Root fibrous. **a.** 4, 5. *Sandy shores.* Pisa. Sic.—Bert.

b. *Inner Glume not setigerous.*

* *Equalling or exceeding Pale.*

6. **setacea.** "Pan. lax, secund, straight. Inner Glume exceeding florets. Awn of outer Pale about twice as long as pale. L. setaceous. **p.** 5. *Calc. hills.* Pal."—Parl.

7. **panormitana.** "Pan. long, secund, spike-like. Spicules sessile, or on very short stalks. Inner Glume equalling florets. Outer Pale 5-nerved. Awn about three times as long as pale. L. setaceo-convolute. **a.** 4, 5. *Fields.* Pal."—Guss.

8. **attenuata.** "Pan. erect, nearly equal. Upper Glume about equalling pale. Outer Pale obsoletely 5-nerved, as long as its awn. L. narrow linear, at last involute. **a.** 4, 5. *Fields on coast.* Pal."—Guss.

9. **sicula.** "Rac. lax, straight, secund. Upper Glumes about equalling pale. Pales equal; outer 5-nerved, longer than its awn. **a.** 5. *Hill pastures.* Sic."—Bert.

** *Glumes falling short of Pale.*

10. **Myurus.** Pan. compact; the lower branches short. Glumes membranous. Flts. nearly sessile, asper, hairless. Awn two or three times as long as pale. Culm sheathed up to base of panicle. **a. b.** 5, 6. *Walls, gravel.*

11. **bromoides.** Pan. branched, lax: the lower branches lengthened. Glume membranous, hardly setigerous. Pale asper at the tip, hairless. Awn two or three times as long as pale. Upper part of Culm smooth and naked. **a. b.** 5, 6. *Dry.*

12. **incrassata.** Rac. compound, subsecund, straight, jointed. Stalks ensiform, very short. Spicules 6–8-flowered. Glumes acuminate. Outer Pale about as long as its awn, and as inner pale, 5-nerved. Nerves serrulato-asper. Culm and L. smooth. **a.** 4, 5. *Sandy shores.* s. Sic. Sard.—Bert.

B. *Glumes not very unequal. Outer Pale acute, or terminating in a seta shorter than itself.*

i. *Ligules with rounded auricles.*

13. **Halleri.** "Pan. contracted, suberect when in flower. Spicules 4–5-flowered; upper solitary, and nearly sessile. Outer Pale 5-nerved; inner lanceolate, cloven. All L. complicato-setaceous. Root fibrous. **p.** 7, 8. *High. Alps.*"—Koch.

14. **ovina.** Pan., when in flower, spreading. Spicules 4–8-flowered. Outer Pale obsoletely 5-nerved; inner oblongo-lanceolate, bidentate. All L. complicato-setaceous. Root fibrous. **p.** 6. *Dry meadows and pastures. Koch notices the following varieties:—*

α. The common form, with which he unites the *F. tenuifolia* of Sibthorp.

β. *alpina*, Gaud., of more humble growth, with fewer and larger spicules. *This, when the spicules have a purple stain, is the* Gaudini *of Koch.*

γ. *violacea*, Gaud. Flts. shining, variegated with green, violet, and yellow.

δ. *valesiaca*, Gaud. Tall, with large spicules, and very long, slender root-L.

ε. *duriuscula*, Linn. Tall, and with large spicules. L. straight or recurved.

ζ. *glauca*, Schr. L. glaucous.

η. *amethystina*, Host. L. rigid and pungent.

θ. *vaginata*, Willd. L. soft and slender. Spicules 8-flowered, awnless.

Several of these varieties become viviparous on high mountains, and thus form the F. vivipara. *Some of them may, perhaps, be species, but no determinate characters have as yet been pointed out.*

15. **aurata.** "Pan. branched, somewhat spreading. Spicules in 2 rows, at last dilated, as broad as they are long, 4–5-flowered. Outer Pale with 4 lateral nerves, hardly perceptible, and a short, dorsal seta. L. soft, capillary; those on the stem folded. **p.** 7, 8. *Mountain pastures.* Upper Vallais."—Gaud.

16. **longifolia.** "Pan. contracted, erect. L. very long, filiform, smooth. Pales ciliato-lacerate. **p.** Liguria."—Kunth, *from* Viviani.

17. **rubra.** Pan. spreading: lower branches long, nearly horizontal. Spicules oblong, about 5-flowered, awned. Flts. lanceolate, acute. Stem-L. sometimes slightly convolute, downy on upper side. Root extensively creeping. **p.** 7. *Sandy shores.*

18. **heterophylla.** Pan. spreading. Spicules oblong, about 5-flowered, awned. Flts. lanceolato-subulate. Stem-L. quite flat. Root-

L. long, filiform. Root fibrous, cespitose. Culm with 2 or 3 knots. **p.** 7, 8. *Shade.*

ii. *Ligule not forming rounded auricles.*

a. *L. setaceous.*

✓ 19. **varia.** Pan. spreading, oblong: branches solitary or in pairs. Spicules lineari-lanceolate, 5–8-flowered. Outer Pale lanceolate, gradually tapering to a point. Seeds hairy at top. L. rigid. Ligule oblong, obtuse. Root fibrous. **p.** 7, 8. *High stony pastures.* Alps.

✓ 20. **pumila.** Pan. spreading, ovate: branches solitary or in pairs. Spicules lineari-oblong, 3–4-flowered. Outer Pale oblongo-lanceolate, abruptly acuminate. Seeds hairy at top. L. flaccid. Ligule oblong, obtuse. Root fibrous. **p.** 7, 8. *Stony mountain pastures.* Alps.

✓ 21. **pilosa.** Pan. spreading: branches semiverticillate. Spicules about 3-flowered. Tuft of Hairs at base of each floret. Seeds hairless. Root-L. nearly terete; those on the stem folded, sometimes flat. **p.** 7, 8. *Very high.* Alps. Umbria. Ætna.

b. *L. flat.*

* *Awn short or wanting.*

† *Ligule oblong.*

‡ *Seeds hairy at top.*

✓ 22. **spadicea.** Pan. branched, spreading: lower branches solitary or in pairs, hairless. Spicules oblong, 4–5-flowered, awnless. Axis roughish. Lower Pale finely dotted, with 3 prominent and 2 subordinate nerves. Sheaths leafy. L. narrow linear, quite hairless. Root fibrous, tufted. **p.** 7, 8. *Very high pastures.* Alps. Auv.

✓ 23. **spectabilis.** "Pan. broad, nodding: lower branches in twos or threes, rough. Spicules about 5-flowered, awnless. Axis covered with a short down. Lower Pale finely dotted, conspicuously 5-nerved. Sheaths all leafy. L. narrow linear, rough above. **p.** 6, 7. *Stony.* s. Alps."—Koch.

✓ 24. **sylvatica.** Pan. much branched, diffuse. Spicules oblong, 3–5-flowered. Flts. awnless. Axis roughish. Lower Sheaths leafless, ending in a short point. L. lineari-lanceolate. Creepers of Root short, and naked. **p.** 6, 7. *Woods. occ.*

25. **drymeia.** Pan. much branched, diffuse, nodding at top: branches rough, the lower in twos and threes. Spicules about 5-flowered. Axis roughish. Lower Pale acuminate, mucronate, finely dotted, with 3 prominent and 5 subordinate nerves. L. lineari-lanceolate, rough on margin. Root with long scaly runners. **p.** 6, 7. *Moist mountain woods.* s. e. G.

26. **exaltata.** "Pan. diffuse, much branched, secund, nodding at top. Spicules 5–8-flowered, compressed. Outer Pale 5-nerved, acute (*not acuminate*), scariose at top, minutely dotted, hairless. L. broadly linear, flat. Ligule oblong, lacerate. Root creeping. **p.** *Mountains.* Sic. K. Nap."—Parl.

27. **borealis.** "Pan. much branched, diffuse, nodding at top: branches about 5, rough. Spicules oblong. Flts. 4–5, bearded ✓ at base. Outer Pale 5-nerved, denticulate at top, or with 3 points. Ligule oblong. **p.** 6, 7. *River-banks.* Spree and lakes communicating with it."—Koch.

‡‡ *Seeds not hairy at top.*

28. **compressa.** "Pan. oblong, spreading. Spicules somewhat terete, acute, 3–4-flowered. Culm terete above. L. rather broad, bluntish, folded, rough on margin, smooth on back. *Between* spadicea *and* Scheuchzeri. **p.** Auvergne."—Kunth.

29. **ferruginea.** "Pan. narrow, erect. Stalks short, not rough. Spicules few, *one-coloured.* Fl. about 6. Glumes acuminate. L. flat. Ligule oblong. Root fibrous, cespitose. **p.** 7, 8. Mt. of Kuna near Rosegg in Carinthia."—Rchb.

30. **Scheuchzeri.** Panicle spreading, branched, somewhat nodding: branches hairless; the lower in pairs. Spicules 4–5-flowered, awnless. Outer Pale rough, 5-nerved, submucronulate below summit. L. linear. Ligule oblong, obtuse. Root creeping. **p.** 7, 8. *High pastures.* Alps. ✓

†† *Ligule truncate, very short.*

31. **elatior.** Pan. diffuse, nodding: lower branches in pairs, with 5–15 ovato-lanceolate spicules. Flts. 4–7, obscurely ribbed. Root creeping. **p.** 6, 7. *Meadows and river-banks.* ✓

32. **pratensis.** Panicle spreading, erect: branches racemose, generally in pairs, each with 3–4 linear spicules. Flts. 5–10, obscurely ribbed. Root fibrous. **p.** 6, 7. *Meadows.* ✓

33. **loliacea.** Rac. rather nodding. Spicules alternate, distant, lineari-oblong: lower stalked, sometimes in pairs; upper sessile. **p.** 5, 6. *Meadows.* E. Fr. G. Sw. ✓

** *Awn twice as long as Pale.*

34. **gigantea.** Pan. lax, nodding, widely spreading. Spicules lanceolate. Flts. 5–8, awned from below the tip. Awn flexuose. L. lineari-lanceolate, hairless. **p.** 7. *Shade. Not in s. It.*

depauperata

904. BROMUS.

A. Inner Pale downy, not ciliate. Sp. 1–3.

B. Inner Pale pectinato-ciliate. Outer Glumes 1-nerved. Spicules broader upwards.

- **i.** Panicle nodding. Sp. 4–8.
- **ii.** Panicle erect. Sp. 9–13.

C. Inner Pale pectinato-ciliate. Outer Glume with 3 or more nerves. Spicules narrower upwards.

- **i.** Point beyond awn of outer Pale longer than broad. Sp. 14–16.
- **ii.** Point broader than long.
  - **a.** Edges of Pale of Fruit rolled in, not covering the floret above it. Sp. 17.
  - **b.** Outer Pale with two terminal setas besides the awn! Sp. 18.
  - **c.** Without either of the preceding characters.
    - * Awns straight. Sp. 19–22.
    - ** Awns twisted or recurved when dry. Sp. 23–27.

A. *Inner Pale downy* (*not ciliate*) *on keels.*

1. **inermis.** Pan. erect. Branches semiverticillate. Spicules nearly terete, hairless. Pale obtuse. Awn very short or wanting. Root creeping. **p.** 7, 8. *Sides of streams,* Fr. *Borders,* G. *Meadows,* Sw. *very rare. Thickets,* Lig.

2. **erectus.** Pan. erect: branches semiverticillate. Spicules lineari-lanceolate. Flts. 5–10. Awn half as long as acute, cloven, 5-nerved pale. L. flat. Root-L. narrow, ciliate. Ligule short. **p.** 6, 7. *Rough pastures.*

3. **asper.** Pan. branched, drooping. Spicules lineari-lanceolate, 7–9-flowered. Pale somewhat 5-nerved, downy, longer than straight awn. L. villous, flat. Ligule very short. **p.** 6, 7. *Shade.*

B. *Outer Glume* 1-*nerved. Spicule broader upwards. Inner Pale pectinato-ciliate.*

i. *Panicle nodding when in flower.*

4. **tectorum.** Spicules linear. Awn straight, as long as subulato-lanceolate pale. Inner part of Culm pubescent. **a.** 5, 6. *Dry.*

5. **laxus.** "Spicules drooping, compressed, linear, pubescent. Awn shorter than pale. L. lax, pubescent, ciliate. *Resembles* B. sterilis, *but is perennial.* **p.** *Hills.* Sax."—Kunth.

6. **sterilis.** Pan. nodding, nearly simple. Spicules oblongo-cuneiform, hardly drooping separately. Outer Pale subulato-lanceolate, shorter than straight awn. Culm hairless. L. downy. **a.** 6, 7. *Walls and barren.*

β. *jubatus,* Ten. Hairless.

7. **Gussonii.** "Pan. subcompound, rather lax, nodding at top. Branches long, somewhat whorled. Spicules about 6-flowered, very thick, very rough. Awn straight, twice as long as the outer lanceolate, deeply cloven pale. Inner Pale acuminate, about half as long as outer. **a.** 5, 6. *Woods and hedges.* Sic. Cors. It."—Parl. m [illegible],

8. **pilosus.** "Pan. dense, nodding. Spicules oblong, 6-flowered, hirsute. Awn very long. Seeds flat, curved at back. **b.** s. Eur."—Kunth.

ii. *Panicle erect when in flower.*

9. **diandrus.** Pan. nearly simple. Spicules lineari-cuneiform. Pale subulato-lanceolate, with 2, close, marginal ribs and one less distinct between these and the keel. Awn straight, as long as pale. Culm hairless. Stamens 2. **a.** 5, 6. *Dry barren. Rare in* England.

β. *polystachyos,* DC. Pan. more branched. Spicules crowded, linear, 8–12-flowered. *Borders.* Mtp. Rous. Bord. Nantes.

γ. *scaberrimus,* Ten. Pan. more branched. Plant larger. Outer Pale equally 7-nerved.

10. **rigidus.** "Pan. and Pedicels erect. Spicules oblongo-cuneiform. Flts. narrow lanceolate. Awn straight, longer than pale. Upper part of Culm downy. **a.** s. Eur."—Kunth. *Var. of* diandrus?

11. **fasciculatus.** "Pan. dense, simple. Spicules linear, about 12-flowered, nearly sessile. Awns about as long as pale, somewhat twisting and recurved when dry. Outer Pale lineari-lanceolate, with 2 setaceous teeth; inner acuminate. L. nearly hairless. **a.** 4, 5. *Dry hills.* Sic."—Parl.

12. **rubens.** Pan. top-shaped, crowded. Spicules villous, lineari-lanceolate, 7–12-flowered. Awn straight, longer than pale. Teeth of outer Pale fringed. **a.** 4, 5. *Dry coasts.* Mediterranean.

13. **maximus.** Pan. somewhat branched, erecto-patent, at last nodding. Awns straight, 2–3 times as long as pale. Rachis pubescent. L. villous. **a.** 7. *Sandy shores.* Mdt. Jersey.

C. *Outer Glume with* 3 *or more nerves. Spicules narrower upwards.*

i. *Point beyond awn of outer Pale longer than broad.*

14. **scoparius.** " Pan. straight, dense, spike-like. Spicules lanceolate, 12–15-flowered, nearly sessile. Awns twisted at base; when dry, rather longer than eleven pale. **a.** 4, 5. *Open.* Sic."—Parl.

15. **lanceolatus.** Rac. straight, nearly simple, rather lax. Spicules lanceolate, 8–16-flowered, longer than their stalks. Awn recurved when dry, rather longer than pale. Sheaths pubescent. **a.** 4, 5. *Fields.* Sic.

16. **divaricatus.** " Pan. erect, somewhat contracted. Spicules lineari-lanceolate, 10–15-flowered, pubescent. Outer Pale cloven, acute. Awn twisted at base, at last divaricate. **a.** *Dry sand.* Nice. Mtp."—Kunth. *Var. of* lanceolatus?

ii. *Point of outer Pale beyond awn, broader than long.*

a. *Edges of Pale in fruit rolled in; not covering the florets above.*

17. **secalinus.** Pan. nearly simple, spreading; in fruit nodding. Spicules oblong. Flts. about 10, broadly elliptic. Outer Pale bidentate. Awns flexuose, shorter than pale. Sheaths hairless. **a.** 6, 7. *Corn.* E. Fr. G. Switz.

β. velutinus. Spicules softly villous.

b. *Outer Pale with two terminal setas besides the awn.*

18. **arduennensis.** Pan. nearly simple, nodding. Spicules compressed, smooth. L. lanceolate, villous on face and margin, smooth on back. **b.** 6, 7. *Fields.* Malmedy.

c. *Without the characters of either of the two previous divisions.*

* *Awns straight.*

19. **brachystachys.** Pan. not contracted after flowering: branches long; those of the lower whorls 6 or more. Flts. subrhomboid. Outer Pale 7-nerved, hardly longer than inner. Seed obovato-oblong, rather exceeding pale. **b.** 6. *Borders.* Magdeburg.

20. **mollis.** Pan. erect, contracted when in fruit. Spicules ovato-oblong, pubescent, on stalks not half as long as spicule. Flts. broad elliptic. Outer Pale with obtuse angle at back in the upper part. Awn straight, as long as pale. L. and lower Sheaths hairy. **b.** 6. *Meadows and uncult.*

21. **racemosus.** Pan. nearly simple, contracted when in fruit. Spicules oblong, smooth. Stalks shorter than spicule. Flts. broadly elliptic. Outer Pale rounded on the back. Awn straight, about equal to pale. L. and lower Sheaths hairy. **a. b.** 6. *Meadows and uncult.*

22. **commutatus.** Pan. lax, spreading, afterwards nodding. Many of the Stalks longer than spicule, awn inclusive. Spicules oblong, many-flowered, rough. Outer Pale 9-nerved, as long as straight awn. L. and Sheaths hairy. **a.** 6. *Corn and woodsides.*

** *Awns twisted or recurved when dry.*

23. **arvensis.** Pan. spreading, afterwards nodding, semiverticillate. Spicules lineari-lanceolate. Flts. elliptico-lanceolate, smooth. Awn slightly squarrose, as long as pale. Pales nearly equal. L. and Sheaths hairy. **a.** 7. *Corn and borders. Rare in* Eng. *Not in* s. *Italy.*

24. **patulus.** Pan. spreading, afterwards nodding. Spicules lanceolate. Flts. elliptico-lanceolate. Awns at last divaricato-reflexed, longer than pale. Outer Pale evidently longest. L. and Sheaths hairy. **b.** 5, 6. *Cult. and hills.* Fr. Palat. Aust.

25. **squarrosus.** Pan. simple, lax, spreading, afterwards nodding. Spicules oblongo-lanceolate. Flts. about 12, acute on the back. Awns at last horizontal. L. and Sheaths hairy. **a.** 6, 7. *Fields.* Eng. *very rare.* Fr. G. Sw. Italy.

26. **confertus.** Pan. nearly simple, compact, erect. Spicules about 10-flowered, oblongo-linear, pubescent, subcompressed, nearly sessile. Outer Pale with 2 teeth. Awn at last divaricate. L. and Sheaths pubescent. **a.** 4, 5. *Open hills.* Palermo. Istr. *According to Parl., this is* B. contortus *of Desf.; but* B. contortus *has a very long* 15*-flowered spicule, and the awn is remarkably twisted, but not divaricate. Parl. blames Koch for uniting* B. intermedius, Guss., *with* B. confertus, M. von B.; *but he points out no distinction between them. I have from Gower* (*Glamorganshire*) *what appears to be a var. of* B.

mollis, *with squarrose awns. The outer pale of this is obovato-subrotund, and when extended is nearly as broad as long; while that of* B. confertus *is oval or oblong, the length more than twice the width. As neither Gussone nor Parl. notices this character, I have not ventured to call my plant* B. intermedius.

Tribe XII. *HORDEACEÆ.*

905. BRACHYPODIUM.

A. *Perennial. Seed crested.*

1. **sylvaticum.** Spike nodding. Spicules numerous (6–13). Awns of upper Flts. longer than pale. L. flat, flaccid. Root fibrous. **p.** 7, 8. *Shade.*

2. **pinnatum.** Spike suberect. Spicules numerous (6–15). Awns shorter than pale. L. rigid, somewhat involute when dry. Root slightly creeping. **p.** 6, 7. *Dry hills.*

β. genuense, DC. Spicules fewer.

γ. Barrelieri, R. and S. Spicules 6–20-flowered. L. hairy within.

3. **distachyon.** Spike erect. Spicules few (1–4), 6–12-flowered. Awn longer than pale. Culm rigid, straight, hairless. Root fibrous. **a.** 5, 6. *Barren. Coasts* of Mdt.

4. **phœnicoides.** Spike erect. Spicules few (3–5), 10–20-flowered. Inner Pale acute, finely ciliate. Awn very short. L. convolute when dry, pungent, erect. Culm smooth. **p.** 5, 6. mdt. Fr. Nicc. Pdm. Landes. *Now considered as a var. of* B. ramosum; *but the more numerous spicules, and broader and less convolute L., bring it as near to* pinnatum.

5. **ramosum.** Spicules few (1–3), 6–12-flowered. Awns very short. L. convoluto-setaceous. Culm much branched at base. Root creeping. **p.** 5. *Open rocky.* Lig. Pdm. Sicily.

B. *Mostly annual. Seed hairless.*

6. **unioloides.** Spicules crowded, varying from broadly ovate to oblong, and with from 3 to 24 florets. Outer Pale 7-nerved. **a.** 4, 5. It. Sic. Sard.

7. **tenellum.** Spicules ovato-oblong, in opposite rows, smooth, 4–6-flowered, *awnless.* Culms simple, slender, growing in tufts, but from different roots. **a.** 5, 6. *Dry.* s. Eur.

β. tenuiculum. Flts. awned.

tuberculosum..

8. **strictum.** "Pan. oblong, spike-like. Spicules 2-flowered, distich. Pales rough on keel. Culm erect. Root fibrous. **a.** 8. *Sands of* Ætna."—Guss. *from* Presl.

9. **unilaterale.** Spicules secund, in 2 rows, awnless, very acute. **a.** 5, 6. Mtp. Avig. Poitou. Pdm. Lig.

10. **festucoides.** Spicules secund, in 2 rows. Flts. about 6, awned. **a.** 5. Lig. Sard. Gennes on the Loire.

906. LOLIUM.

A. *Root perennial, throwing out barren shoots.*

1. **perenne.** Spicules lanceolate, exceeding glumes. Young L. of barren shoots simply folded. *Awn small or wanting.* Flts. 6–12. **p.** 6. *Meadows, &c.*

β. tenue. Slender. Flts. 3–4.

2. **italicum.** Spicules exceeding glumes. L. of barren Shoots convolute. *Flts. usually awned.* **p.** 6–9. *Meadows, &c. occ.*

B. *Root annual or biennial, without barren shoots.*

3. **rigidum.** Glume more than half as long as spicule. Spicules 5–10-flowered. Flts. lanceolate, herbaceous, awnless. **a.** 6, 7. *Dry pastures and uncult.* Aosta. Trieste.

4. **multiflorum.** Glumes not half as long as spicule. Spicules 12–14-flowered. Flts. herbaceous, lanceolate, closely tiled: the upper awned. **a.** 6, 7. *Fields.* s. Eur.

5. **siculum.** Spike dense: the Rachis excavated only at the base of each spicule, and round and perfectly smooth below the next! Spicules many-flowered, incurved before flowering, awnless, more than twice as long as glume. **a.** 4, 5. *Grassy.* Sic.—Parl.

6. **strictum.** "Culm and Spike straight. Spicules awnless, tereto-subulate, about 5-flowered, equalling glume. **a.** 5, 6. *Barren pastures.* Palermo."—Guss.

7. **linicola.** Glumes hardly half as long as spicule. Spicules elliptic when in fruit. Pales coriaceous at the base; inner widest. **a.** 6, 7. *Among flax.* G.—Koch.

8. **temulentum.** Flts. elliptic. Awn firm, longer than pale; being more than a continuation of the midrib. Glume equal to spicules. **a.** 6, 7. *Corn.*

✓ 9. **arvense.** Flts. elliptic, awnless, or terminating in a short and slender bristle, a mere continuation of the midrib. Glumes nearly equal to spicules. Stem quite smooth. **a.** 7. *Corn.*

907. TRITICUM.

A. Annual. Of very extensive field cultivation, and sometimes escaping, but not permanently establishing themselves. Sp. 1–7.

B. Perennial. Wild.

- **i.** Root creeping.
  - **a.** Spicules in middle of Spike not reaching to base of second spicule above them. Sp. 8.
  - **b.** Spicules reaching to, or beyond base of second spicule above them. Sp. 9–15.
- **ii.** Root not creeping. Sp. 16–20.

A. *Annual. Cultivated. Glumes ventricose.*

i. *Seed free. Rachis tough.*

1. **vulgare.** Erect, smooth. Spicules 4-flowered. Glumes irregularly ovate, truncate, compressed below tip. Nerve obtusely prominent. Rachis with a hairy margin.

α. æstivum. Glumes awned.

β. hybernum. Glumes nearly awnless. **a.** 5, 6.

2. **turgidum.** Spicules 4-flowered, turgid, villous. Glumes ovate, truncate; with wing-like keel, and broad point.

β. compositum. Spike branched. **a.** 5, 6.

3. **durum.** Spicules generally 4-flowered. Glumes oblong, *three times as long as broad;* with wing-like keel, broad point, and long awn. Culm full. Seeds long, horny, gibbous. **a.** 5, 6. *Cult.* in s. Eur.

4. **polonicum.** Spike irregular. Spicules usually 3-flowered. Glumes oblongo-lanceolate, thin and papery, conspicuously many-nerved. Upper Pale of outer floret half as long as lower. Culm full. **a.** 5, 6. *Cult.* in G. and n. It.

ii. *Seeds covered with permanent pales. Rachis brittle.*

5. **Spelta.** Spike parallelly flattened, loosely imbricate. Spicules generally 4-flowered. Glumes ovate, truncate, mucronate, with an obtuse tooth on one side. Cusp of Glume straight. **a.** 5, 6. *Cult.* in s. Eur.

6. **dicoccum.** Spike pressed edgewise, closely imbricate. Spicules generally 4-flowered, 2-seeded. Glumes dentato-mucronate, with an obtuse tooth on one side. Keel compressed, very prominent, and with the teeth inflexed. **a.** 5, 6. *Cult.* in G.

7. **monococcum.** Spike compressed, closely imbricate. Spicules about 3-flowered. Seed 1. Glumes bidentate. Lateral Tooth acute, straight. Keel running out in a straight point. **a.** 5, 6. *Cult.* in G. Sw. n. It.

B. *Perennial. Wild.*

i. *Root creeping.*

a. *Spicules in middle of Spike not reaching to base of second spicule above them.*

8. **junceum.** Spicules 5–8-flowered. Glumes very obtuse, 9-nerved, half as long as spicule. ✓ Pale obtuse, pointless. Rachis hairless, fragile. L. velvety above. **p.** 6–8. *Sandy shores.*

b. *Spicules in middle of spike, reaching to or beyond the base of the second spicule above them (sometimes even to the base of the fifth).*

9. **obtusiflorum.** "Spike subcontinuous. Glumes very obtuse, 9-nerved. Flts. awnless, obtuse, with a little point. Rachis rough. L. plano-subconvolute, glaucous. **p.** Zeeland."—KUNTH.

10. **strictum.** Stiff and straight. Spicules 5–10-flowered, approximate. Glumes lineari-lanceolate, acute, smooth, 5-nerved. L. flat, convolute when dry, velvety above. **p.** 6, 7. *Shore* at Warnemünde.

11. **acutum.** Spicules 5–8-flowered, approximate. Glumes lineari-lanceolate, 7-nerved, subacute, one-third as long as spicule. Pale subacute. Rachis nearly smooth. L. with rough points on upper surface. **p.** 6, 7. *Shores* of Ocean and Baltic.

12. **glaucum.** Spicules 5-flowered; the lower rather remote. Glumes oblong, 5–7-nerved, very obtuse or truncate, half as long ✓ as spicule. Pale very obtuse, sometimes awned. Rachis asper. L. with a simple row of minute points on the nerves. **p.** 6, 7. *Waysides.* G. Fr. Sw.

13. **pungens.** Spicules 5–10-flowered, approximate. Glumes lanceolate, 7-nerved, acute, with a short mucro; half as long as spicule. Pale obtuse, pointless. L. with a simple row of minute points on nerves. **p.** 6, 7. *Sandy shores. occ.*

14. **repens.** Spicules about 5-flowered. Glumes lanceolate, acuminate, 5-nerved. Pale obtuse or acuminate; with or without awn. L. with a simple row of minute points on the nerves on the upper surface. **p.** 6, 7. *Cult.*

15. **cristatum.** Spicules closely imbricate, depressed, straight, 3–7-flowered. Glumes elliptic, keeled, awned, obscurely ribbed. Culm simple. **p.** 7. *Sea-side.* Between Arbroath and Montrose. *Very rare.*

ii. *Root not creeping.*

16. **rigidum.** Spicules 5–10-flowered; the lower remote. Glumes oblong, 9-nerved, very obtuse or broadly truncate, half as long as spicule. Pale very obtuse, awnless. Rachis harsh. L. very rough above. (Root sometimes slightly creeping, Bert.). **p.** 6, 7. *Sandy.* Boh. Aust. Shores at Venice and Trieste.

17. **scirpeum.** "Spicules cuneato-ovate, remote, truncate. Outer Pale truncate. Rachis rough, with prickly edges. Culm hollow. L. involute, somewhat hairy. (Root somewhat creeping, Guss.). **p.** 6, 7. *Salt marshes.* Sicily."—Bert.

18. **panormitanum.** "Spike few-flowered, generally involucrate with the somewhat ventricose sheath of the upper L. Spicules slightly imbricate. Glumes 7–9-nerved, acuminate, equalling the spicules (exclusive of the awn). Flts. about 5. Awn of outer Pale longer than floret. L. flat, at last involute. Root fibrous. **p.** 5, 6. *Calc. mountains.* Pal."—Parl.

✓ 19. **caninum.** Spicules about 5-flowered. Glumes 3–5-nerved, acute. Flts. awned. Rachis asper. L. rough on both sides. Root fibrous. **p.** 6, 7. *Shade.*

[illegible]

20. **biflorum.** Spicules 2, rarely 3- or 4-flowered. Glumes lanceolate, acuminate, 3-nerved. Awn three times as long as pale. Rachis rather rough. L. hairless, rough on margin. **p.** 7, 8. Alps of Goritz.

908. SECALE.

1. **cereale.** Spicules 2-flowered. Glumes 1-nerved. Rachis tough. **a.** 5. *Cult. and occ. escapes.*

2. **montanum.** Rachis hairy, brittle. Glumes 2-flowered, 1-nerved, linear, acute or with a short point. Root fibrous. **p.** 6, 7. *Gravelly mountains.* Sicily.

3. **villosum.** Spicules 4-flowered. Glumes with 2 or 3 strong ribs, uniting into a single cusp: one of them with tufts of hair. **a.** 5, 6. *Dry fields.* Lyon. Cors. It.

909. ÆGILOPS.

1. **ovata.** Spike ovoid. Spicules 3–5. Glumes with 4 or 5 awns. Awns aculeato-asper from base, nearly equal in all the spicules. Pale 2–3-awned. **a. b.** 5, 6. *Dry granitic.* s. Europe. ✓

2. **triticoides.** Spike cylindrical. Spicules 4–7. Glumes with 2–3 awns, which are nearly equal in all the spicules, and aculeato-asper from base. Pale with 1 or 2 awns. **a.** 5. Iapygia.

3. **neglecta.** "Spike ovato-elongate, narrowed upwards. Spicules about 5, tiled. Glumes turgid, hirsute. Awns 3, nearly equal in all the spicules, not aculeato-asper at base. Outer Pale densely ciliate. **a.** 5. *Fields.* It."—Bert.

4. **triaristata.** Spike cylindrical, narrowed at top. Spicules about 4. Glumes with 3 awns, nearly equal in all the spicules, without prickles at base. Pale with 1 or 2 short awns. **a.** 5. *Cult.* It. Trieste.

5. **triuncialis.** Spike cylindrical, 4–6-flowered. Lower Glume with 2, upper with 3 awns. Awns of terminal Spicules much longer than the others. Pale with 1 or 2 short awns. **b.** 5, 6. *Dry.* s. Fr. ✓

6. **caudata.** Spike cylindrical. Spicules 5–8. Glumes ending in 2 unequal teeth: those of terminal Spicule with a single long awn. Pale of lateral Spicules awnless, or with a single short awn; of terminal Spicule with a long awn. **a.** 5, 6. *Vineyards.* Aosta. *According to Kunth, this, the* A. cylindrica *of Host and Bert., is the* caudata *of Linn.,* squarrosa *of DC.*

910. ELYMUS.

A. *Glumes and outer Pale pointless.*

1. **arenarius.** Spike erect, dense. Spicules about 3-flowered, pubescent: the upper and lower in pairs; intermediate ones in threes. Glumes ciliate, longer than spicule. L. involute, rigid. **p.** 7. *Sandy shores.* Ocean. Baltic. ✓

2. **geniculatus.** Spike bent down. Spicules about 3-flowered, pubescent; lower remote. Glumes hairless, longer than spicule. L. involute, rigid. **p.** *Sandy shores.* c. Eur. Holland.

B. *Glumes and lower Pale awned.*

✓ 3. **europæus.** Spicules 1–2-flowered, rough, ternate. Glumes lineari-subulate, as long as spicule. L. smooth. Sheaths hairy. **p.** 7, 8. *Sandy hills.*

✓ 4. **crinitus.** Spicules in pairs, erect, 1–2-flowered. Glumes lineari-subulate, awned. Outer Pale rough, with an awn many times longer than itself. **a.** 5, 6. *Fields and rubbish.* Trieste. Ætna.

911. HORDEUM.

A. *Annual. Cultivated.*

1. **vulgare.** Flts. all complete, awned. Seeds in 4 rows. Culm erect. **a.** 6, 7.

2. **hexastichum.** Flts. all complete, awned. Seeds in 6 rows. **a.** 6. *Cult.* in G. Switzerland.

3. **distichum.** Lateral Flts. barren, linear, awnless. Perfect Flts. ovate, in 2 rows. Awn erect. **a.** 6, 7. *Cult.* G.

4. **Zeocriton.** Lateral Flts. barren, linear, awnless. Perfect Flts. ovate, in two rows. Awn spreading. **a.** 6, 7. *Cult.* in G.

B. *Not cultivated.*

✓ 5. **murinum.** Flts. all awned; lateral barren or neuter. Glume of intermediate Flt. lineari-lanceolate, ciliate, rough; *interior valves of barren Flt. ciliate at base on one side.* **a.** 7. *Woods and rubbish.*

β. *pseudo-murinum*, Koch. Glumes broader. Interior valve of barren Flt. ciliate at base on both sides.

✓ 6. **maritimum.** Flts. hairless; lateral barren, with a short awn. Glumes rough. Inner Glume of lateral Flts. semilanceolate; the rest setaceous. Outer Pale of perfect Flt. nearly nerveless. **a.** 5. *Dry shores.*

β. *pubescens*, Guss. Flts. pubescent. Outer Pale 3-nerved. Pal.

✓ 7. **pratense.** Lateral Flts. barren, with short awns. All Glumes setaceous, rough. **p.** 6, 7. *Pastures.* Br. G. Switz. *very rare. Mountains*, Sic.

8. **strictum.** Lateral Flts. barren, stalked, awnless. Perfect Flt. with a long awn. Glumes setaceous, rough.—Seb. and Mauri. *United by Kunth with* bulbosum. **p.** 4–6. *Meadows and pastures.* Rome.

✓ 9. **bulbosum.** "Flts. all perfect, awned. Glumes setaceous, ciliate at base. **p.** It."—Linn.

Tribe XIII. *PAPPOPHORÆ.*

912. ECHINARIA.

✓ 1. **capitata.** Spike ovoid, simple. **a.** 4, 5. w. and s. Fr. It. *occ.*

Tribe XIV. *ROTBOELLACEÆ.*

913. NARDUS.

✓ 1. **stricta.** Spike one-sided, straight, three times as long as sheath. **p.** 7. *Heaths*, n. E. *Mountains*, It.

914. PSILURUS.

✓ 1. **aristatus.** Spike very slender, curved. **a.** 4, 5. *Dry barren hills.* mdt. Fr. It. Sic.

915. LEPTURUS.

✓ 1. **cylindricus.** Spike subulate, subincurved. Glume single! ensiform, acuminate, adpressed, 1-flowered, awnless. **a.** 6. *Sandy shores.* Mdt. and at Angoulême.

✓ 2. **incurvatus.** Spike taper, incurved. Flt. 1, with a minute rudiment?, awnless. L. flat. **a.** 5, 6. *Salt.*

✓ 3. **filiformis.** Spike taper, subcompressed, erect. Glumes 1-flowered. L. channeled. **p.** 5. *Shores.* s. Eur. Holst.

4. **fasciculatus.** Spikes axillary, clustered!, curved. Spicules 1-flowered, in 4 rows (in 2 when fresh, Guss.). Glume single. Stem decumbent. **a.** 7–9. Naples. Pasione.

5. **pannonicus.** Spike taper, erect. Two complete Flts. L. flat. **a.** Fr.—Kunth.

CRYPTOGAMIA.

For the characters of the Natural Orders in this class, and of the Sections, see Genera.

CXIV. CHARACEÆ.

916. CHARA.

A. Tube of Stem and Branches surrounded by smaller tubes. Whorled Branches simple, bearing the fruit.
- **i.** Anthers or Globules on a different plant. Sp. 1–3.
- **ii.** Anthers placed below the fruit on the same plant. Sp. 4–6.

B. Tube of Stem surrounded by spiral tubes; that of Branches without them. Sp. 7.

C. No surrounding tubes.
- **i.** Anthers placed below the fruit. Sp. 8.
- **ii.** Anthers by the side of the fruit. Sp. 9.
- **iii.** Anthers placed above the fruit.
  - **a.** Whorled Branches not trifid nor dichotomous. Sp. 10, 11.
  - **b.** Whorled Branches more or less dichotomous. Fruit at the forks, clustered. Sp. 12–14.
  - **c.** Whorled Branches dichotomous. Flowers solitary. Sp. 15–18.
- **iv.** Anthers on a different plant. Sp. 19.

A. *Tube of Stem and Branches surrounded by smaller, generally spiral, tubes. Whorled Branches simple, bearing the fruit.*

i. *Anthers or Globules on a different plant.*

1. **crinita.** "Stem thickly clothed with clustered, slender, very acute prickles. Two very acute Bracts at base of fruit. Crown of Fruit very short, broad, erect. Halle in Sax."—Braun.

2. **aspera.** Stem clothed in its upper part with long, slender, detached strigæ. Bracts 4–6, exceeding the fruit. 5–8. *Stagnant water, occ. I find whorls of spines on the barren branches.*

3. **ceratophylla.** "Prickles of the Stem very short. Plant larger and thicker than *C. vulgaris.* Berlin. Scaphusia."—Braun. "Stems branched, corky, very rigid, twisted. Prickles conical, cuspidate, papilliform. Ramuli about 6 in a whorl, jointed, widely spreading; upper shorter, incurved, coloured. Bracts whorled, spreading, ovate, about equalling the globule and fruit. *Brackish pools near* Wansleben. *The largest of the genus.*"—Wallr.

ii. *Anthers placed below the fruit.*

4. **vulgaris.** Prickles on the Stem 0, or few and scattered. Bracts exceeding the fruit. 5–8. *Ditches and pools.*

5. **hispida.** Prickles on the Stem numerous, more or less clustered. Bracts exceeding the fruit. 6–8. *Ponds and still water.*

6. **fragilis.** Stem without prickles. Bracts falling short of fruit. 5–8. *Stagnant.* ✓

B. *Stem surrounded by spiral tubes. Whorled Branches without them.*

7. **scoparia.** "Seed crowned with a very acute papilla. Berlin."—Braun.

C. *No surrounding tubes.*

i. *Anthers placed below the fruit.*

8. **coronata,** Gay *from* A. Braun. *I have no further description of this.*

ii. *Anthers on each side of fruit.*

9. **barbata,** Gay *from* A. Braun. *I have no further description.*

iii. *Anthers placed above the fruit.*

a. *Whorled Branches not di-trichotomous.*

10. **translucens.** Branches simple, obtuse. Flowering-branches short, much divided, with clusters of fruit surmounted by an anther and 3 points or very short bracts. *Sandy pools, rare.*

11. **glomerata.** Whorled Branches furnished with whorls of secondary branches or bracts. Fr. clustered. 6–8. *Stagnant.* Bondy. *Said to be* C. nidifica *of Eng. Bot.*

b. *Whorled Branches di-trichotomous. Fruit at the forks, clustered.*

12. **hyalina.** "Div. of Branches inflated, acuminate. *Seeds larger than in* C. glomerata."—Braun.

13. **prolifera.** "Branches very long, simple, of 2 or 3 fructiferous whorls, short, forming a head. L. (or Branches) divided at the lower joints. Seeds very smooth, with hardly conspicuous striæ. Mayence."—Braun. *I do not understand this description, which, perhaps, may indicate a structure like that of* C. translucens.

14. **polysperma.** "Lower Branches mostly subdivided. Mtp. Cors."—Braun. *Seems to be very like* C. prolifera, *but to differ by its larger size, and by having the upper branches undivided.*

c. *Whorled Branches di-trichotomous. Fruit solitary.*

15. **brongniartiana.** "Whorled Branches simply di- or trichotomous, acute. Lorr. Als. Palat."—Coss. C. flexilis *of Braun, according to Coss.*

16. **gracilis.** Branches lax, more than once divided, capillary; terminal Div. mucronate, composed of 2 joints shorter than the rest. 6–8. *Sandy pools. Very rare.*

17. **mucronata.** Branches lax, more than once divided, not capillary; terminal Div. mucronate, composed of 2 joints shorter than the rest. 6–8. *Still water. rare.*

18. **tenuissima.** Branches short, forming dense tufts, and giving the plant a beaded appearance, more than twice divided. Terminal Div. longer than the others. 6–8. *Peaty pools. Rare.*

iv. *Anthers on a different plant.*

19. **syncarpa.** Fruit clustered, without bracts. Whorled Branches sometimes forked. 6–8. *Stagnant. Cosson puts to this* C. flexilis *of Smith, and* capitata *of Braun.* C. flexilis *of Linn. he pronounces to be a different species. Wallroth considers* flexilis, *Sm.*, nidifica, syncarpa, gracilis, *and* translucens, *as all belonging to* C. flexilis *of Linn., and adds, as a var.*, glomerata *and* tenuissima, *under the name of* stellata.

CXV. EQUISETACEÆ.

917. EQUISETUM.

A. *Barren and Fertile Stems distinct, dissimilar: the former simple, appearing before the others; the latter with whorled, simple branches.*

1. **Telmateja.** Sheaths of fertile Stems with 30–40 teeth. Whorls of barren Stem of about 30 branches, which are 4-edged, with a furrow on each edge. **p.** 4. *Damp woods and banks. A head of fructification sometimes occurs on the barren stems.*

2. **arvense.** Sheaths of fertile Stems loose, remote, with about 8 teeth. Branches of barren Stem 6–12 in a whorl, with 4 simple edges. Stem roughish, with about 12 furrows.

B. *Barren and Fertile Stems appearing together; the latter at first simple, but afterwards throwing out branches, and resembling the barren.*

3. **umbrosum.** Sheaths of fertile Stems approximate, with 12–14 teeth. Branches of barren Stems 6–12 in a whorl, simple, and with 4 simple edges. Stem rough, with about 20 stripes. **p.** 5, 6. *Moist meadows and woods.* G. Br. I. Pyr.

4. **sylvaticum.** Barren and Fertile Stems each with about 10 furrows. Branches of barren Stems compound, deflexed. Sheaths of Stem lax, with about 4 broad, membranous teeth. **p.** 5, 6. *Moist shade. occ.*

C. *Barren and Fertile Stems always similar.*

i. *Catkins obtuse.*

5. **limosum.** Stem smooth, with 14–16 stripes, often nearly simple. Teeth of the Sheaths 10–20, short, rigid, acute. Branches erect, undivided. **p.** 7. *Water.*

6. **palustre.** Stem with 5–8 furrows, branched. Sheaths loose, *pale, tipped with brown.* Teeth 6–8. **p.** 6, 7. *Boggy.*

ii. *Catkins with an apiculus.*

7. **ramosum.** Stems numerous, with 8–15 simple, rounded ribs. Branches few, irregular. Sheaths *green.* Teeth 6–8, convex, but with a central furrow, dark at base, but with a whitish, membranous, finely acute margin. **p.** 7, 8. *Dry or sandy.* s. Eur.

8. **hyemale.** Stem simple, very rough, with 14–24 furrows. Sheaths close: their Ribs nearly flat, with a fine dorsal depression,

more marked at the base of the teeth. **p.** 7, 8. *Wet shady banks. Rare.*

9. **trachyodon.** Stems simple, with 7–11 furrows. Sheaths lax: their Ribs flat. Teeth ovate, obtuse, muriculate on back and margin, with a brown excurrent dorsal line. **p.** Summer. *Moist sandy.* Rhine.

10. **Mackaii.** Stem simple or slightly branched, with 8–12 furrows. Teeth slender, persistent, *at last black.* Ribs with a deep dorsal depression. **p.** 7, 8. *Mountain glens.* Belfast. Se.

11. **variegatum.** Stem slightly branched, rough, with 5–9 furrows. Sheaths green at base. Teeth obtuse, each tipped with a decided bristle, black in the middle, with a white membranous margin. Ribs with a deep dorsal depression. **p.** 7, 8. *Barren, wet.* Br. G. Sw.

CXVI. FILICES.

Tribe I. *POLYPODIEÆ.*

918. POLYPODIUM.

1. **vulgare.** Frond deeply pinnatifid. Lobes oblong, crenulate. Stem scaly. **p.** 8–10. *Walls, banks, and old trees.*

β. *serratum.* Lobes lineari-lanceolate, serrate.

γ. *cambricum.* Lobes pinnatifid.

2. **Phegopteris.** Frond pinnate. Pinnæ lineari-lanceolate, united at base; lower turned downwards. Lobes lanceolate, obtuse, entire. Sori marginal. **p.** 7–9. *Bogs and damp among mountains.*

3. **rhæticum.** Frond smooth, oblongo-lanceolate, bipinnate. Pinnules pinnatipartite. Segm. inciso-crenate, obliquely mucronate. **p.** 7, 8. *Mountain thickets.* Hartz. Vosges. Alps. *Habit of* Athyrium Filix-fœmina.

4. **Dryopteris.** Frond ternate, without glands. Div. pinnate. Pinnæ pinnatifid, obtuse; uppermost nearly entire. Sori marginal. **p.** 7. *Rocky mountains.*

5. **calcareum.** Frond ternate; with stalked glands. Div. pinnate. Pinnæ pinnatifid, obtuse; uppermost nearly entire. Sori marginal. **p.** 7. *Rocky calc.*

919. POLYSTICHUM.

1. **Lonchitis.** Frond lineari-lanceolate, pinnate. Pinnæ sessile, lunulato-triangular, spinuloso-serrate, rigid. **p.** 7. *High rocks.*

2. **aculeatum.** Frond (when fully developed) oblongo-lanceolate, bipinnate. Pinnules ovato-lunulate, decurrent. **p.** 7. *Shady rocks and banks.*

β. *lobatum,* Sm. Frond lineari-lanceolate, hardly bipinnate.

3. **angulare.** Frond drooping, lanceolate, bipinnate. Pinnules stalked, *often pinnatifid,* slightly lunulate. **p.** 7. *Shade.*

β. *Braunii,* Döll., *Rhein fl.* Frond more attenuate. Pinnules broadly oblong, truncate at base.

γ. *hastulatum,* Ten. Frond lanceolate. Lobe on upper side of base of pinnules much prolonged.

920. LASTRÆA.

A. *Teeth of L. spinescent.*

1. **cristata.** Frond lineari-oblong, pinnate. Pinnæ ovato-triangular, often prolonged, pinnatipartite; the 3 or 4 lower pair nearly equal, and without fruit. Indusium large, nearly entire. Stipe scaly at base. **p.** 8. *Bogs.* Norf. Nott. Abbeville. Paris.

2. **spinulosa.** Frond oblong, bipinnate. Lowermost Pinnæ without fruit, about as long as the succeeding ones. Indusium entire. Stipe with rounded scales. **p.** 7, 8. *Boggy shade.*

3. **dilatata.** Frond lanceolate, bipinnate. The lowermost Pinnæ shorter than the following, all bearing fruit. Indusium fringed with stalked glands. Stipe with lanceolate, or ovato-lanceolate, acute scales. **p.** 7, 8. *Shade.*

4. **Fœnisecii.** Frond ovate, bipinnate. Lowermost Pinnæ larger than the others; all bearing fruit. Indusium somewhat ragged on the edge. Stipe thickly covered with lanceolate, acutely lacerate scales. **p.** 8, 9. *Shade.* Ireland. n. Eng. *It is probable that* L. tanacetifolia, DC., *is one of these; but the description is not sufficient to identify it.*

B. *Teeth not spinescent.*

5. **rigida.** Frond oblongo-lanceolate, bipinnate. Lower Pinnæ nearly as large as the

following. Pinnules oblong, incise. Lobes acutely dentate. Plant abounding in stalked glands. Indusium fringed. Stipe short, densely scaly. **p.** 6–8. *Rocks.* Yorkshire. Alps. Grande Chartreuse.

✓ 6. **Filix-mas.** Frond lanceolate, bipinnate. Pinnæ oblong, prolonged; lower nearly as long as the following. Pinnules oblong, with short teeth. Indusium quite entire. Plant not glandular; *the chaff of Stipe extending almost to the extremity of the frond.* **p.** 6, 7. *Shade.*

7. **pallida.** "Stipe chaffy between the pinnæ, smooth. Frond oblongo-lanceolate, bipinnate. Pinnules sessile, nearly equal at base, and slightly cordate, ovato-oblong, obtuse, acutely denticulate. *Indusium of a reddish grey.* Sori at last confluent. **p.** 2–6. *Hedges and shady rocks.* Sic."—Guss.

✓ 8. **Oreopteris.** Frond pinnate, lanceolate, attenuate. Pinnæ oblong, prolonged, pinnatipartite; the 4 or 5 lower pair much smaller than those above them. Segm. glandular beneath. Margin of the Fertile Frond revolute. Sori near the margin. Stipe short, chaffy at base. **p.** 7. *Heathy hills.*

✓ 9. **Thelypteris.** Frond ovato-lanceolate, pinnate, on a long and smooth stipe. Pinnæ pinnatifid; lower pair not much shorter than the rest. Segm. oblong, without glands, entire. Margins of the Fertile Fronds revolute. Root creeping. **p.** 7, 8. *Bogs, occ.*

921. CYSTEA.

[In the first three species the outline of the fronds is lanceolate; that of the pinnæ may perhaps rather be called ovate prolonged, which is also nearly the form of the pinnules, though these are sometimes oblong. In all, the pinnules are decurrent by a narrow margin, so that the frond is hardly in strictness bipinnate. The pinnules nearest to the main stem are always more divided than the others. The species all depend in great measure on the degree in which the division of the L. takes place; and the gradation is almost insensible from the first to the last.]

1. **dentata.** Pinnæ pinnate only at base. Lower Pinnules incise, not pinnatifid. **p.** 7. *Rocks.* Wales. Sc.

✓ 2. **fragilis.** Frond bipinnate. Lower Pinnules pinnatifid; upper inciso-dentate. **p.** 6–8. *Rocks and walls.*

✓ 3. **alpina.** Frond bipinnate. Lower Pinnules pinnate; upper deeply pinnatifid. Segm. lineari-oblong. **p.** 6–8. *High rocks.* Alps. Pyrenees.

✓ 4. **montana.** Frond ternato-tripinnate; *the lower pinnæ being much larger than the others.* Pinnules pinnatifid. **p.** 6–8. *Mountain woods.* Alps.

922. WOODSIA.

✓ 1. **hyperborea.** Frond lineari-lanceolate. Pinnæ broadly ovate, pinnatifid. **p.** 7. *High rocks.* Wales. Yorkshire. Sc. Alps. Pyrenees. *rare.*

✓ 2. **ilvensis.** Frond oblongo-lanceolate. Pinnæ triangulari-oblong, pinnatifid. Segm. oblong. **p.** 7. *High rocks. Very rare.*

Tribe II. *ASPLENIEÆ.*

923. GRAMMITIS.

✓ 1. **leptophylla.** Frond smooth, thin, pinnate or bipinnate. Pinnules cuneiform, with rounded lobes. *The sori are said to be round or oblong; but the capsules are so scattered that they can hardly be said to form sori.* **p.** 3, 4. *Sandy.* Britt. Prov. It.

924. ATHYRIUM.

✓ 1. **Filix-fœmina.** Frond lanceolate, bipinnate. Pinnules lineari-oblong, pinnatifid; the lower forward segment rather longer, toothed at the end. **p.** 6–8. *Moist shade.*

β. irriguum, Sm. Smaller.

✓ 2. **fontanum.** Frond lineari-lanceolate, bipinnate. Pinnules broad, with a few large, spreading, spinescent teeth. Rachis, even the principal, winged. **p.** 6–8.

β Halleri

925. ASPLENIUM.

A. *Frond narrowed at base by the position of the lower branches, which are nevertheless as long as those above them. Pinnæ alternate.*

✓ 1. **Ruta-muraria.** Frond bi-tripinnate. Pinnules rhomboid, nearly entire. Indusium fringed. **p.** 5–9. *Walls and rocks.*

2. **Matthioli.** Frond bi-tripinnate. Pin-

nules cuneate, rounded at top, nearly entire. **p.** 3, 4. *Calc. rocks.* Sic. *rare.*—Guss.

3. **brachyphyllum.** Frond bi-tripinnate. Pinnules fan-shaped, inciso-lobate. Indusium linear, hairless, dentato-crenulate. Seeds prickly. **p.** 5, 6. *High rocks.* Madonie. *On rocks* opposite Isnello.—Guss.

4. **fissum.** Frond ovate, tripinnate. Pinnules cuneiform, trifid. Segm. ending in 2 or 3 teeth, *which are often emarginate.* Indusium quite entire. **p.** Summer. *Fissures of high rocks.* s. e. Alps.—Koch.

5. **Breynii.** Frond lanceolate, bipinnate only at base, simply pinnate at top. Pinnæ cuneiform, inciso-dentate at top; lower pinnatifid. Segm. cuneiform. Indusium quite entire. **p.** Summer. *Fissures of rocks.* Ger. *occ.* — Koch, *who gives* alternifolium *and* germanicum (*both belonging to one plant*) *as synonyms; but the description is so different that I insert it here.*

6. **alternifolium.** Frond linear, simply pinnate. Pinnæ cuneiform, cloven at top. Indusium quite entire. **p.** 6–9. *Walls and rocks.* Als. upper Loire. Sc.

7. **septentrionale.** Frond of from 1 to 3 narrow, somewhat laciniate Lts., which are cuneiform at base. **p.** Summer. *Exposed rocks.*

B. *Frond not narrowed at base; or, if narrowed, it is by the lower pinnæ being shorter. Divisions with a distinct midrib.*

8. **viride.** Frond linear, simply pinnate. Pinnæ roundish ovate or rhombic, crenate. Nerves simple, or forked above the sori. Rachis *green,* without a scariose margin. **p.** 6–9. *Calc. rocks.*

9. **Trichomanes.** Frond linear, simply pinnate. Pinnæ roundish ovate, crenate. Nerves forked below the sori. Rachis dark, polished, with a denticulate, scariose margin. **p.** 5–9. *Walls and rocks.*

10. **marinum.** Frond oblong, simply pinnate. Pinnæ obliquely ovate, the base being prolonged forwards. **p.** 6–9. *Maritime rocks. Not in Ger.*

11. **pilosum.** Frond lanceolate, alternately pinnate. Pinnæ ovate or ovato-oblong, inciso-lobate and pinnatifid. Lobes obtuse, covered with club-shaped hairs. **p.** 3, 4. *Warm calc. rocks.* Pal.—Guss.

12. **obovatum.** Frond bipinnate. Pinnules obovate, nearly entire at the end; the lower pair shorter than the 2 or 3 above. *The sori are hardly longer than in* Athyrium fontanum. **p.** 4, 5. *Igneous rocks.* Isch. Sic. and sic. Islands.

13. **lanceolatum.** Frond bipinnate. Pinnules ovate, ending in acute teeth; the lower pair shorter than the two or three above. Sori short. **p.** 6–9. *Rocks and walls.* Fr. Eng. *rare.*

14. **Adiantum-nigrum.** Frond bipinnate. Pinnæ ovato-triangular, acuminate, sharply toothed; the lowest pair longest. **p.** 6–9. *Rocks and loamy banks.*

15. **Virgilii.** Frond tripinnate. Pinnæ oblongo-lanceolate, very acuminate. Pinnules lineari-lanceolate, acutely inciso-dentate. Sori at last confluent. **p.** 2, 3 (6, Poll.). *Volcanic rocks.* Eug. hills. Sic. and sic. Isl.

926. CETERACH.

1. **officinarum.** Frond pinnatifid. Segm. alternate, obtuse, densely scaly beneath. **p.** 4–9. *Walls and rocks.* s. and w. Eur.

927. SCOLOPENDRIUM.

1. **vulgare.** Fronds oblongo-linear, cordate at base, *often curly at the end and sometimes divided.* **p.** 7, 8. *Damp and shady banks.*

2. **sagittatum.** Frond hastate. Lateral Lobes obtuse. Sori from twice to six times as long as broad. **p.** *Maritime rocks.* Mars. Corsica.

3. **Hemionitis.** Frond 5-lobed, deeply cordate at base. Sori 12 times as long as broad. **p.** 4, 5. *Shady rocks and walls.* San Michele. Trapani.

928. BLECHNUM.

1. **boreale.** Frond oblong, pectinato-pinnatifid. Pinnæ of fertile Frond linear, acute; of barren oblongo-linear, subobtuse. **p.** 7. *Moist loamy banks.*

929. WOODWARDIA.

1. **radicans.** Frond pinnate. Pinnæ somewhat stalked, pinnatifid. Div. lanceolate, acuminate, serrulate. Rachis proliferous. **p.** 6, 7. *Shady rocks.* Ischia. Sorrento. Sic. *rare.*

Tribe III. *PTERIDEÆ.*

930. ALLOSORUS.

✓ 1. **crispus.** Frond bi-tripinnate. Pinnæ of barren Frond cuneato-oblong; of fertile oblong. **p.** 7. *Stony mountains.* Wales. n. Eng. Sc. Alps. Fr. G.

931. CHEILANTHES.

✓ 1. **odorus.** Frond smooth, bipinnate. Pinnules pinnatipartite. Segm. rounded. Stipe chaffy. **p.** 4, 5. *Warm rocks.* Vesuv. Cors. Prov. e. Pyr. Sic.

932. NOTHOLÆNA.

✓ 1. **Marantæ.** Frond oblong, bipinnate. Pinnules opposite, united, scaly beneath, smooth above. **p.** 6–9. *Warm rocks.* Thueys and Tournon in Ardèche. s. Tyr.

2. **lanuginosa.** Frond oblongo-lanceolate, bipinnate, woolly on both sides. Pinnules opposite, united, very obtuse; upper confluent. **p.** 11–3. *Warm rocks.* Cat. Pal.

933. STRUTHIOPTERIS.

✓ 1. **germanica.** Barren Fronds broadly oblong, acuminate and attenuate, pinnate, pinnatipartite. Segm. equal, obtuse, entire. Fertile Frond lanceolate, pinnate. Pinnæ linear, subterete, entire. **p.** 7, 8. *Moist valleys.* G. Switzerland. *occ.*

934. PTERIS.

✓ 1. **aquilina.** Fronds tripartite. Branches bipinnate. Pinnules lineari-lanceolate, the lower pinnatifid. Segm. obtuse. **p.** 8, 9. *Woods and heaths.*

✓ 2. **cretica.** Frond pinnate. Pinnæ opposite, lanceolate; the lowest tripartite. **p.** 6. *Rocks.* Nicc. Massa. Cors. Nap.

✓ 3. **longifolia.** Frond pinnate. Pinnæ linear, somewhat auriculato-cordate, serrulate. Stipe and Rachis chaffy. **p.** 6, 7. *Warm moist rocks.* Ischia *in the hot vapours.* Sic. near Taormina, Syracuse, &c.

935. ADIANTUM.

✓ 1. **Capillus-Veneris.** Frond bipinnate. Pinnæ alternate, thin, fan-like. Sterile Lobes serrate. **p.** 6–9. *Warm moist.* s. and w. Europe.

Tribe IV. *HYMENOPHYLLEÆ.*

936. TRICHOMANES.

✓ 1. **radicans.** Frond smooth, 3 or 4 times pinnatifid. Segm. linear. Involucrum solitary, in the axils of the upper segments. Seta at first included, afterwards very prominent. **p.** 9, 10. *Waterfalls.* Killarney. Wicklow? *Very rare.*

937. HYMENOPHYLLUM.

✓ 1. **tunbridgense.** Fronds pinnate. Pinnæ porrect. Segm. linear, spinoso-serrate. Involucrum compressed, spinuloso-serrate. Rachis with a broad wing. **p.** 7. *Shady rocks.* Eng. *Trunks of trees.* Cherbourg.

2. **Wilsoni.** Frond pinnate. Pinnæ somewhat recurved. Segm. linear, spinoso-serrate. Involucrum inflated, entire. Border of Rachis narrow. **p.** 7. *Shady rocks.* Sc. n. England.

Tribe V. *OSMUNDEÆ.*

938. OSMUNDA.

✓ 1. **regalis.** Frond bipinnate. Pinnules somewhat auricled. Fr. in a bipinnate panicle. **p.** 7–9.

Tribe VI. *OPHIOGLOSSEÆ.*

939. BOTRYCHIUM.

✓ 1. **Lunaria.** Barren Frond oblong, pinnatipartite, solitary. Pinnules flabellato-semilunar, incise. **p.** 6, 7. *Dry pastures, occ. There are rarely 2 barren fronds, and sometimes the pinnules are deeply divided.*

✓ 2. **matricarifolium.** Barren Frond oblong, pinnatipartite, solitary. Pinnæ ovato-oblong, pinnatifido-lobate. Lobes slightly crenate. **p.** 5, 6. *Dry pastures.* G. Vosges. *rare.*—Koch.

3. **rutifolium.** "Barren Fronds usually 2; the lower sheathing base of fertile frond. Blade broadly triangular, ternate. Div. pinnate. **p.** 6, 7. *Mountain woods.* s. e. G. Vosges." —Koch.

940. OPHIOGLOSSUM.

✓ 1. **vulgatum.** Frond ovate, obtuse. Spike club-shaped. **p.** 5, 6. *Clayey pastures.*

✓ 2. **lusitanicum.** Barren Frond lanceolate, on a cuneate base. **p.** 1, 2. *Dry barren.* Istr. Rome.

CXVII. MARSILEACEÆ.

941. MARSILEA.

1. **quadrifolia.** L. in fours, on long stalks. Lts. entire on the margin. Fr. stalked. **p.** 7–9. *Wet.* Fr. Rhine. Salzb. Carin. Carn.

2. **pubescens.** L. in fours. Lts. quite entire, pubescent. Fruit sessile. **p.** Iapygia.

942. PILULARIA.

1. **globulifera.** Elongated, creeping. L. setaceous. Fr. globose, *about the size of a pea.* **p.** 8. *Shallow water, occ.*

943. SALVINIA.

1. **natans.** L. ovato-cordate, rough beneath with bundles of hairs. Fruit clustered. 6–8. *Stagnant.* Lubeck. Silesia. Baden. s. Europe.

944. ISOETES.

1. **lacustris.** L. subulate, semiterete, of 4 longitudinal jointed tubes. **p.** 7–9. *Bottoms of lakes.*

CXVIII. LYCOPODIACEÆ.

945. LYCOPODIUM.

A. *All the Capsules 2-valved. Seeds loose, rounded.*

1. **clavatum.** L. scattered, ending in a filament. Spikes 2 or 3 together on a strigose stalk. Scales ovato-triangular, finely lacerato-dentate. **p.** 7, 8. *Heathy hills.*

2. **Chamæcyparissias.** L. in 2 opposite rows, with additional, nearly equal L. above and below the stem. Spikes 2–6 on a lengthened stalk. Bracts broadly ovate, eroso-crenulate. **p.** 7, 8. *Woods and heaths on a barren soil.* G. Vosges.

3. **complanatum.** L. connate at base in 2 rows, with a detached row above and below; the latter very small. Spikes 2–6, on a lengthened stalk. Bracts broadly ovate, cuspidate, eroso-crenulate. **p.** 7, 8. *Woody hills.* Paris? Rhine. Alps. Boh.

4. **alpinum.** L. in 4 rows, acute, keeled, entire. Branches fastigiate, erect. Spike sessile, terminal. Bracts broadly ovate, acuminate, denticulate. **p.** 8. *Mountains.*

5. **annotinum.** L. scattered, lanceolate, cuspidate, serrate. Flowering-branches with yearly rings. Spikes sessile, solitary, terminal. Bracts broadly ovate, cuspidate, eroso-denticulate. **p.** 8. *Mountains.* Sc. Dau. G.

6. **Selago.** L. in 8 rows, uniform, lanceolate. Stem dichotomous, erect, fastigiate. Caps. in the axils of L. **p.** 6–8. *Heathy hills.*

7. **inundatum.** L. scattered, linear, acute. Stems close to the ground, rooting. Spikes stalked, erect, solitary. Bracts like L., but somewhat dilated at base. **p.** 8. *Boggy heaths.*

B. *Capsule 4-valved. Seeds* 3 or 4, *angular, fixed.*

8. **selaginoides.** L. scattered, lanceolate, ciliate. Stem procumbent, rooting. Spikes terminal, solitary, erect. Floral L. larger. **p.** 8. *Moist mountain heaths.*

9. **helveticum.** L. in 4 rows, oval, subacute: two larger spreading; two smaller adpressed. Stem rooting. Bracts and L. of branches similar, acute. **p.** ? *Shade.* Alps.

10. **denticulatum.** L. somewhat 4-rowed, oval, acutely mucronate: two larger spreading; two smaller adpressed. Stem rooting. Bracts finely acuminate. **a.** ? s. Fr. It.

ADDITIONS.

p. 1, before Section **A.** in *Thalictrum,*

T. macrocarpum. Gr Carpels inflated, without angles or furrows. Pan. few-flowered. Pedicels very long, one-flowered. Lower L. 3–4 times ternate. **p.** 6, 7. Central Pyr. —Gr. *and* Godr.

p. 3, after *Anemone Pulsatilla,*

A. montana. Hoppe Root-L. triplicato-pinnatifid. Div. linear, acute. Fl. nodding. Sep. straight, turned out at the top, twice as long as stamens.—Koch. *Gr. and G. describe the primary Div. of L. as placed on long stalks, but they quote Koch.* **p.** 5. Dau. Auv. Angers. Dax. Toulon. s. Tyr.

p. 6, after *Ranunculus Ficaria,*

R. calthifolius. Rch Stem not creeping. Root-L. subrotundo-cordate, the lobes overlapping. Fl.-stalk very long. Carpels hispid. **p.** 4, 5. *Fds. and vineyards.* Toulon. Cors.—Gr. and G., *who state that in* R. Ficaria *the lobes of the L. diverge, and that the carpels are downy.*

p. 6, after *Ranunculus auricomus,*

R. demissus. DC Carpels nearly hairless. Rec. hairless. Carpels 15–20, with a filiform, recurved beak. Stem-L. tripartite. Segm. lanceolate, not divergent. **p.** 7. *Mountains.* Cors.—Gr. *and* G.

p. 8, after *Nigella arvensis,*

N. hispanica. L Anthers apiculate. Inner Lip of Nect. lineari-lanceolate, equalling outer! Caps. 8–10, united to the top, glanduloso-rugose. **a.** 7, 8. s. Fr.—Gr. *and* G.

p. 8, after *Aquilegia alpina,*

A. Bernhardi. Gr & G Spur curved, slender, hardly half as long as blade of petal (*in all the other species they are as long, or longer*). L. large, twice ternate. Lts. trifid, crenate. **p.** 6. Monte Rotondo in Cors.—Gr. *and* G.

p. 12, after *Hypecoum procumbens,*

H. grandiflorum. Benth Pod only obscurely jointed, marked with longitudinal ribs. Outer Pet. largest, 3-lobed; inner trifid. (Fil. with a membranous expansion at the base, Benth.) L. not flat on the ground. Stems ascending, forming dichotomous panicles. **a.** 6. Lower Rousillon.—Gr. *and* G.

p. 13, after *Corydalis acaulis,*

C. capnoides. L L. trifid or tripartite, incise. Lowest Bracts inciso-tripartite, on long stalks. Spur as long as corolla. Seeds hooded by the caruncle. **a.** 6, 7. *In rich but stony ground.* Pustherthal in s. Tyrol.

p. 15, after *Iberis amara,*

I. bicorymbifera. Gr & G Rac. a sort of double corymb, with intermediate abortive flowers. Silicle winged, as broad at the summit as in the middle, ending in two terminal lobes, which exceed the style. L. numerous at the top of the barren shoots; all pinnatifid, on long stalks. **b.** ? Mende.—Gr. *and* G.

p. 16, add note to *Lepidium Smithii:*

Gr. and G. consider this a var. of L. heterophyllum; *but the silicles are not always rounded at the base, and the terminal wing is very narrow and often wanting.*

p. 16, after *Lepidium Smithii,*

L. Villarsii. Gr & G Silicle oval, the wing forming about $\frac{1}{4}$ of its whole length, rounded at base; stalk smooth. Style exsert. All L. undivided. "Souche vivace, verticale, indéterminée, écailleuse." **p.** Gap.—Gr. and G. *These authors describe the root of* L. hirtum *in the same words; while in* L. heterophyllum *it is,* "Souche vivace, déterminée, non écailleuse, renflée et noueuse supérieurement." *In* L. hirtum *the wing is* $\frac{1}{2}$, *in* L. Villarsii $\frac{1}{4}$, *in* L. heterophyllum $\frac{1}{3}$, *and I may add in* L. Smithii *not* $\frac{1}{6}$, *of whole length of the silicle.*

p. 17, after *Lepidium ruderale,*

L. virginicum. L Silicle round, nearly flat, with a very narrow wing, shorter than pedicel. Stigma sessile. Pet. oblongo-cuneiform, twice as long as sepals. Lower L. obovate, toothed or pinnatifid; upper lanceolate, serrate. **a.** 5, 6. Bayonne.—Gr. *and* G.

p. 18, add note to *Alyssum alpestre:*

A. robertianum, Gr. and Godr., seems to be a var. of this, distinguished by larger flowers and seed-vessels.

p. 23, after *Brassica balearica,*

B. insularis. Moris "L. numerous, crowded at the base of the flowering-stalks, and at the top of the barren branches, stalked, entire or lyrate. Stem branched, woody at base. Pet. white, veined. Seeds smooth. **p.** 5. Rocks between Caproline and Pont a la Leccia, Cors."—Gr. *and* G. (Pet. obversely oblong. Upper L. oblongo-lingulate, Bert.) *According to Gr. and G., the true* B. balearica *differs from this in having yellow petals abruptly contracted into a claw, an emarginate, nearly sessile stigma, and a very slender pod. They call* B. robertiana *the plant which, following Loiseleur, I have called* balcarica, *and describe the seeds as strongly and elegantly pitted.*

p. 34, add note to *Cistus albidus:*

Messrs. Gr. and G. find a hybrid between this and *C. crispus.*

p. 34, after *Cistus crispus,*

C. Pouzolzii. Delil L. at the base of the branches wrinkled and undulate; the others ovali-lanceolate, not wrinkled, with prominent nerves. *This plant has the down of* C. albidus; *the L. at the base of the branches are those of* C. crispus; *the habit, the inflorescence, and the flowers, the style excepted, resemble those of* C. monspeliensis. **p.** 6. Alais. Le Vigan. Mtp. Narbonne.—Gr. *and* G.

p. 39, add note to *Viola hirta:*

Gr. and G. mention a hybrid between this and *V. alba.*

p. 42, add to *Reseda lutea,*

β. *Jacquini.* Seeds larger, not shining, shagreened.

p. 46, add note to *Dianthus monspessulanus:*

According to Gr. and G., two forms of hybrids are met with, between this and *D. sylvaticus,* i. e. *D. Seguieri.*

p. 55, before *Arenaria balearica,*

A. modesta. Duf Viscido-pubescent, erect, subdichotomous. Lower L. lanceolato-oblong; upper nearly linear, acute. Sep. oval, acute, nerveless. Pet. as long as sepals. **a.** 6. Aix. Mars. Perpignan. Le Gard. Cors.—Gr. *and* G.

p. 55, after *Arenaria ciliata,*

A. ligericina. Lecoq & Lamotte Stems tufted, entirely herbaceous. Plant covered with spreading, glandular hairs. Sep. 1-nerved. Pet. $\frac{1}{3}$ longer than calyx. L. oval or lanceolate, pubescent, 1-nerved. **p.** 6, 7. Florac.—Gr. and G. *In* A. ciliata *the L. and Sep. have each several nerves.*

p. 57, after *Mœhringia trinervia,*

M. pentandra. Gay L. ovate, not ciliate. Sep. 1-nerved; all hairless. Pet. 0. Sta. 5: the Fil. not reaching to above $\frac{1}{3}$ of the sepal. **a.** 5, 6. *Olive-grounds.* Cors.—Gr. *and* G.

p. 58, after *Cerastium atrovirens,*

C. Riaei. Desmoul. Stalk of Fruit refracted, as long as calyx, $\frac{1}{2}$ as long as curved Caps., and continued in the same line with it. Sep. thin, almost translucent, with a narrow scariose margin, hairless at top, twice as long as petals. **a.** 5, 6. *Cult.* Trèves. Le Gard.—Gr. *and* G.

p. 59, after *Cerastium latifolium,*

C. pyrenaicum. Gay Pet. and Sta. ciliate. Bracts like the L. Stems long, scaly and hairless at base. Fl.-stalks solitary, or in pairs, as long as Caps., reflected after flowering. Pet. hardly half as long again as sepals. Shell of Seed much larger than kernel. L. oval, or ovali-lanceolate. **p.** 9. Col de Nouri, Vallée de Llo, e. Pyr.—Gr. *and* G.

p. 59, after *Cerastium arvense,*

C. Boissieri. Gr Shell of the Seed much larger than its kernel, and attached to it only at a single point. Caps. large, bellying, nearly straight. Cal. and Stalks covered with curled hairs, more or less viscid. L. lanceolate or linear, woolly. **p.** 6. *Glacière de* Bastia.—Gr. *and* G. *This large shell to the seed is attributed also to* C. latifolium *and* C. pyrenaicum, *and is likewise supposed to* C. stenopetalum, *a species which in other respects seems hardly distinguished from* C. arvense.

p. 60, after *Elatine hexandra,*

E. campylosperma. Seub Seeds curved like a horse-shoe. Pet. 4. Sta. 8. Fl. alternate; Fl.-stalks usually longer than L. L. longer than stalks. **a.** 5–8. Nantes.—Gr. *and* G.

p. 63, add to *Malva parviflora,*

β. *microcarpa,* Gr. *and* G. Hairs tufted. Hyères. Toulon.

p. 66, after *Hypericum humifusum,*

H. corsicum. Steud Stem procumbent, with 4 prominent lines. L. semiamplexicaul, with pellucid dots. Sep. finely acuminate. **p.**—Gr. *and* G. Monte d'Oro, Corsica.

p. 68, after *Erodium cicutarium,*

E. tenuisectum, Gr. *and* G. *Distinguished, apparently, from* E. cicutarium *by being perennial, the flowers in each umbel fewer, the L. more finely divided, and by the want of a fold below the circular depressions on the summit of the valves of the fruit.* **p.** *Shore of* Corsica.

p. 70, add to *Geranium palustre,*

β. *Endressi,* Gr. *and* G. Pedicels of Fr. shorter, erect, covered with soft spreading hairs. w. Pyr.

p. 71, after *Oxalis Acetosella*,

O. lybica. Viv Stemless. Scape 1–3-flowered. Pedicels of Fr. reflected. Sep. beardless, but tipped with a brown, anther-like, double callus. **p.** Greek chapel at Ajaccio. —Gr. *and* G.

p. 76, after *Genista Lobelii*,

G. Morisii. Spines slender. L. numerous, nearly sessile. Lts. and upper L. obversely lanceolate, acute. Two spine-like Stipules at base of L.-stalk. Fl. solitary, nearly sessile, in a sort of raceme. **S.** 5, 6. *Dry pastures.* Sard.—Bert.

p. 77, after *Genista tinctoria*,

G. Delarbrei. Lecoq & Lamotte *Like* G. tinctoria, *but the flowers are larger, the pods wider, rounded at the end and almost truncate, and the Seeds black and shining. The Stipules also are triangular, and much shorter.* **S.** 7, 8. Auv. Pyr.—Gr. *and* G. ✓

p. 79, add to *Cytisus hirsutus*,

β. *elongatus.* Pedicels as long as the calyx. Stem covered with adpressed hairs.

p. 81, after *Ononis spinosa*,

O. Masquillieri. Stem hairy. L. mostly ternate. Lts. oblong, acutely serrulate. Fl. solitary, but forming a spike-like raceme. Cal. falling short of legume: Seg. lineari-lanceolate, acute. Seeds with minute points. **p.** 7. Bologna.—Bert.

p. 82, after *Ononis mitissima*,

O. villosissima. Villous, viscid. Stem prostrate. L. ternate. Lts. obovate, serrulate. Stip. ovate, acute. Rac. leafy, spike-like. Seg. of Cal. equal, lanceolate, acuminate, rather exceeding corolla and legume. **a.** 5. *Fields on the coast.* Corigliano in Cal.—Bert.

p. 85, after *Medicago littoralis*,

M. Braunii. Gr & G "Differs from *M. littoralis* in having the length of the teeth of the calyx equal to that of the tube, and the standard as long as the keel; in the legume turning to the right, the border obtuse, and armed with two rows of spreading spines. **a.** 5, 6. *Sandy shores.* mdt. Fr."—Gr. *and* G.

p. 92, add to *Trifolium resupinatum*,

β. *Clusii.* Fl. stalked. Legume orbicular. Teeth of upper lip of Cal. of Fr. much shorter than in the type. Seeds nearly spherical. **a.** 6. mdt. Fr.—Gr. *and* G.

p. 94, add to *Dorycnium herbaceum*,

β. *gracile.* Teeth of Cal. as long as tube. —Gr. *and* G.

p. 104, after *Vicia onobrychoides*,

V. corsica. Gr & G Fl. 1–3, falling far short of the L. Upper Teeth of Cal. convergent; lower falling little short of corolla. Leg. on short stipes. Seeds 2. Lts. 10–16, attenuate at each end. Stip. linear, acute, adpressed; the lower semihastate. **a.** Bastia. *Habit of* Ervum hirsutum.—Gr. *and* G. *This is a* Cracca *of these authors, distinguished from* Vicia *by the style hairy all round at the top, and from* Ervum *by the legume truncate, and produced into a beak.*

p. 114, after *Rubus plicatus*,

R. thyrsoideus. Wimm "Pet. obovate, attenuate. Stem erect, arched only at the summit, regularly angular and deeply channeled for its whole length, 12 *feet high*, without glands or hairs. Pr. only on angles of stem, stout, and enlarged at base; straight, except a few of the upper ones, which are sickle-shaped; those of the flowering-branches hooked. L. green above, paler and downy beneath. Middle Lt. oval, acuminate, slightly cordate at base; lateral obovato-oblong, attenuate. **S.** 6, 7. *Woods.* Fr. *rare.*"—Gr. *and* G.

p. 115, after *Rubus sylvaticus*,

R. collinus DC "Pet. obovato-orbicular, rounded at the base, and abruptly contracted into a short claw. Stem somewhat downy, angular at base, anguloso-canaliculate for the rest of its length. Pr. short, but the upper and those of the flowering-branches hooked. Middle Lt. orbiculari-rhombic, with short acumen; lateral Lts. oblong, the lower on short stalks. **S.** 6, 7. *Dry hills.* Nancy. Prov. Lang."—Gr. *and* G.

p. 115, after *Rubus fuscus*,

R. piletostachys. Gr & G "Pet. obovato-oblong, with a long attenuation at base. Stem angular: faces flat, hairy, and with stalked glands. Pr. few, straight on a broad base; the upper somewhat inclined: those on the flowering-branches few, straight, and slender. L. green on both sides. Lateral Lts. stalked. **S.** 6. *Woods.* Lorr. Puy de Dôme."—Gr. *and* G. *Placed by authors among* Rubi *with erect stems; but the description seems hardly analogous to the species of that subdivision.*

p. 116, after *Rubus incanescens*,

R. micans. Gr & G "Pet. oval, entire, contracted into a short claw. Stem obtusely angular, channeled at the summit, slightly downy, furnished with sessile glands, and with very unequal straight prickles, mostly very small. Pr. of flowering-branches straight; of the L.-stalks hooked. L. pale above, whitish and velvety below; with shining hairs on the nerves. Middle Lt. oval, acuminate, slightly cordate at base: lateral ovali-oblong, stalked. **S.** 6. Nancy."—Gr. *and* G.

p. 118, after *Potentilla aurea*,

P. pyrenaica. Ram "Stems ascending. Lts. 5: terminal teeth equal. Stip. obtuse, united to the leaf-stalk nearly for their whole length! Fl.-stalks (those of the dichotomy excepted) hardly, or not at all, longer than the diameter of the corolla. *Plant sometimes thickly clothed with subadpressed hairs, sometimes nearly smooth.* **p.** 8. *High valleys.* Central and eastern Pyrenees."—Gr. *and* G.

p. 119, after *Potentilla thuringiaca*,

P. delphinensis. Gren "Stems erect. Flowering-branches lateral, from the axils of 2 small L. Lts. oblong, green, covered with adpressed hairs; terminal teeth equal. Stip. lanceolate, acuminate, very long. Fl. erect; the stalks (those of the first dichotomy excepted) hardly, or not at all, longer than the diameter of the corolla. *Distinguished from* P. recta *by the lateral flowering-branches.* **p.** 7, 8. Mte. Viso. Lautaret *on the brink of a ravine.*"—Gr. *and* G.

p. 121, after *Poterium polygamum*,

P. Magnolii. Spach Fr. with large, obtuse tubercles. Angles with thick, deeply sinuato-crenulate crests. **p.** 6–8. mdt. Fr.—Gr. *and* G.

p. 121, after *Rosa gallica*,

R. geminata. Rau Le Cher. Lyons.—Gr. *and* G. *Said to differ from* R. gallica *by its Lts. rather obtuse, simply serrate at top, and not at all for the lower third of their length, dull above, and whitish beneath.*

R. macrantha. Desp La Flêche.—Gr. *and* G. *Differs from the preceding by its larger size and stronger prickles. The L. are acute, shining on the upper, and green on the lower surface, somewhat cordate, and toothed on their whole circumference.*

R. arvina. Krock "Styles united in a downy column. Fr. oval, rough with glands. Lts. 5, rarely 7, dark green above, greyish white beneath, with simple, spreading, oval, glandular teeth. *Pet. bright pink.* **S.** 6. La Creuse. Angers."—Gr. *and* G. *These three species (if the two first are anything but varieties of* R. pumila) *are probably hybrids between* R. gallica *of the gardens and* R. arvensis.

p. 123, after *Rosa canina*,

R. obtusifolia. Desv Stalk of the primary Germen not half as long as germen. Fr. elliptic, urceolate. Free part of Stip. advancing. Lts. 5–7, ovali-subrotund, subobtuse, pubescent on both sides. *Fl. white.* **S.** 6. Angers.—Gr. *and* G. *This seems distinguished from* R. canina *only by the shortness of the primary stalks; and the description leaves it doubtful whether these do not lengthen in the fruit.*

p. 126, after *Epilobium virgatum*,

Gr. and G. maintain that the *E. virgatum* of Koch is erroneously named, and propose to call this plant *E. Lamyi.* They thus distinguish the 4 allied species:—

E. palustre. L Stem without raised lines. Fl.-buds nodding. Runners long and slender.

E. virgatum. Fries Stem with 2 or 4 raised lines. Fl.-buds erect. Runners long and slender, with widely scattered leaves.

E. tetragonum. L Stem with 4 raised lines. Middle L. sessile, somewhat decurrent. Rosettes of L. in place of runners.

E. Lamyi. F. Schultz Like *tetragonum*, but with a decurrent haft to the L.

p. 126, after *Epilobium alsinifolium*,

E. Duriæi. Gay Differs from *E. alsinifolium* in having the stigmas spreading in form of a cross. These two and *E. alpinum* have subterraneous scaly runners.—Gr. *and* G.

p. 128, after the note on *Tamarix gallica*,

Gr. and G. admit 3 species of *Tamarix*:—

T. gallica, L where the hypogynous disc has 10 obtuse angles, the Stamens inserted in the intermediate sinus, and the Caps. pyramidal, tapering from the base to the summit.

T. anglica, Webb where the hypogynous disc has 5 acute angles, on which the Stamens are inserted, and the Caps. is ovoid, 3-edged, abruptly contracted above. This grows on the French coast from Bayonne to Dunkirk. In both these the Anthers are apiculate.

T. africana Poir has anthers without an apiculus, the Disc as in *T. anglica*, and a short, ovoid, 3-edged Fr. slightly attenuate at top.

p. 129, after *Montia fontana*,

M. rivularis. Gmel Cymes arising from a knot, producing 2 equal, opposite L. **p.** 7–9. *Rills on granitic. In* fontana *the terminal cymes have a scariose bract opposed to a L.*—Gr. *&* G.

p. 130, after *Herniaria incana*,

H. latifolia. Lapey Styles erect, parallel. **p.** 7, 8. c. Pyr. *In all the other species the styles diverge. In* glabra *and* hirsuta *the Fl. are sessile; in* incana, latifolia, *and* alpina, *they are stalked; all the species are perennial, and the three last-mentioned somewhat woody.*—Gr. *and* G.

p. 137, after *Saxifraga media*,

S. luteo-purpurea and **S. ambigua** seem to be hybrids between *S. media* and *S. aretioides.*—Gr. *and* G.

p. 138, after *Saxifraga pentadactylis*,

S. nervosa. Lapeyr L. glutinous, enlarged and somewhat amplexicaul at base, spreading abrubtly above into a rounded-oblong, 3–5-cleft border. Segm. lanceolate, obtuse, becoming linear when old and strongly nerved. Shoots woody, naked at base, often 4 inches long. **p.** 6, 7. *Very high.* e. and c. Pyr."—Gr. *and* G.

p. 140, after *Saxifraga ajugifolia*,

S. obscura. Gren G "Pedicels shorter than the Fl. L. (when fresh) nerveless, disposed in a rosette at base of the almost filiform stem, 7-cleft. Segm. lanceolate. Shoots woody, covered by the old, dry, finely nerved L. **p.** 7, 8. Vallée d'Eynes, e. Pyr."—Gr. *and* G.

Messrs. Gr. and G. subdivide this section of the Saxifrages by the form of the petals. In *geranoides, pedatifida,* and *pedemontana,* the claw is nearly as long as the blade. In *obscura, pentadactylis, nervosa, adscendens, ajugifolia, pubescens, cæspitosa β, exarata, muscoides, androsacea, planifolia, sedoides, sponhemica* and *hypnoides,* the claw is nearly or totally wanting.

p. 144, after *Buplgurum fruticescens*,

B. spinosum. Gouan "Differs from *B. fruticescens* in the shorter, stiffer, more spreading, and at length spinescent rays of the umbels; in the smaller umbellules; in the more numerous L. crowded at base of flowering-branches; in its stiffer, more numerous, divaricate, interlacing branches. It forms a small bush like *Alyssum spinosum.* **s.S.** Cors.—Gr. *and* G.

p. 149, after *Seseli coloratum*,

S. caruifolium. Vill Partial Bracts numerous, linear, ciliate, with a broad, white margin. L. bipinnate, with a narrow oblong outline. Stalk channeled. Lts. linear, mucronate: the segments contiguous to the common stalk, decussate. Stem solitary, erect, finely striate. Root fusiform, not branched. **p.** 7. *High dry pastures.* Alps of Dau.—Gr. *and* G.

p. 150, after *Ligusticum pyrenæum*,

L. corsicum. Gay "General Bract 1 or 0; partial 3–5, cuspidate, attenuate. Ribs of the Fr. harsh and denticulate. Outline of L. oblong. Lower L. small, stalked, tripinnate; upper sessile, with 2 auricles, on a membranous sheath. Stem erect, covered at base with the persistent sheaths of the old L. **p.** 7, 8. *High mountains.* Cors."—Gr. *and* G.

p. 154, after *Pastinaca divaricata*,

P. lucida. Gouan "Fr. oval. Stripes on inner face 2, descending to base. L. neatly reticulato-venose, finely serrulate, pinnate, on a very thick and spongy stalk. Lts. 3–7, obliquely oval. Upper L. of branches simple, rhomboid. Stem furrowed. *Smell disagreeable.* **b.** 7, 8. St. Florent, Bastia, Cors."—Gr. *and* G.

p. 155, after *Laserpitium gallicum*,

L. Nestleri. Soy-Will "General Bracts 1–3, setaceous, caducous; partial similar. Fr. oblong, rounded at base, hairless. Wings equal; the marginal a little wider than the disc of the seed. L. triternate. Segm. oval, often cordate at base and 3-lobed, or cuneiform without lobes. Stalk long, compressed laterally. Middle and upper L. smaller and less divided, and sessile on an inflated sheath. Stem erect, finely striped. **p.** 6. *Mountain woods.* Pyr. Cev. &c."—Gr. *and* G.

p. 158, after *Torilis heterophylla*,

T. nodosa. Gært Diffuse. Umbels crowded, nearly sessile, opposite L. General Bracts 0. Pr. of outer seeds glochidiate; of inner reduced to tubercles. L. bipinnate, pinnatifid, incise. **a.** 5, 6. *Fields.*

p. 158, after *Elæoselinum meoides*,

E. Lagascæ. Boissier "Central Umbel of 15–20 smooth rays; lateral smaller and generally sterile. General and partial Bracts numerous, setaceous, acuminate. Fr. oval. Marginal Wings broad, *yellow,* plaited. L. minutely divided into short, linear, acute, channeled segments; upper almost reduced to an inflated sheath. Stem round, erect, hairless. **p.** 6. *Walls.* Citadel of St. Florent, Cors."—Gr. *and* G.

p. 158, after *Scandix Pecten-Veneris*,

S. hispanica. Boiss Beak convex on the faces, three times as long as fruit. Styles as long as stylopode. Partial Bracts lineari-oblong, entire. *Rays of umbel not more than half as long as those of* S. Pecten-Veneris. **a.** *Cult.* Prov.—Gr. *and* G.

p. 201, after *Anthemis abrotanifolia*,

A. muricata. L. pinnatipartite. Segm. mucronate, entire or tripartite. Fr.-stalks thickened upwards. Phyll. with a broadly scariose margin. Rec. convexo-conical. Chaff acuminate, deciduous. Seeds with tubercled stripes, and a very short, dimidiate crown. *In* A. abrotanifolia *the crown is complete.* **a.** 5. *Open grassy hills.* Caltanisetta, Delia, Sic.—Guss.

p. 365, after *Lilium Martagon*,

Aloe.

1. **vulgaris.** Woody. L. lanceolate, erect, acuminate, serrato-spinose. Fl.-stalk branched. Fl. *yellow,* pendulous. **S.** 5, 6. *Marit. rocks.* Cefalù. Milazzo.—Guss.

The following may also be added :—

p. 57, after *Mœhringia papulosa*,

M. glaucovirens. "Densely tufted. L. lineari-setaceous, short, keeled. Sep. ovato-lanceolate, keeled, with a solitary nerve. Pet. lanceolate, about as long as sepals. **p.** 7. *High rocks*. Dos Alto, in the Alps of Brixen."—Bert.

M. thomasiana. "Stems erect, densely tufted. L. linear, 3-nerved. Sep. 4 or 5, lanceolate, finely acuminate, 3-nerved, exceeding petals. **p.** 7. *Calc. rocks*. Grigne on the L. of Como."—Bert.

p. 129, after *Myrtus communis*,

M. tarentina. Segm. of Cal. very obtuse. Stalks solitary, one-flowered. Branches hairy. L. ovate, small, crowded. Berry globose. **S.** 7. Naples. *In* M. communis *the Segm. of Cal. are acuminate, and the berry is ovoid. The seeds in the present species are also more numerous, much smaller, and more compressed.*—Bert.

p. 149, after *Seseli Gouani*,

C. *General and partial Bracts numerous.*

S. lucanum. Root-L. triternate. Lts. long, filiform. Umbels of many (*about* 40) rays. Bracts linear. Fr. oblong, covered with a stellate pubescence. Furrows with a single stripe. **p.** 7. *High rocks*. Balvani, Lucania.—Bert.

p. 153, after *Pastinaca Opoponax*,

P. Fleischmanni. H.dTm Stem furrowed. L. bipinnate. Lts. *opposite, remote*, elliptico-lanceolate, pinnatifido-dentate. Inner face of Seed with 2 stripes. **b.** 7, 8. *Rough hills*. Castle hill at Laybach.—Koch.

p. 155, after *Laserpitium gallicum*,

L. verticillatum. Koch Root and lower L. ternato-tripinnate. Lts. ovate or oblong, doubly inciso-dentate. Terminal Lt. trifid, on an entire, decurrent, wedge-shaped base. *Upper Branches often in whorls.* Rays of Umbel smooth, unequal. **p.** 7, 8. *Hill meadows*. Istria."—Koch.

p. 165, omit *Galium insubricum*, which is a var. of *G. Mollugo*.

p. 241, add to *Trachelium cæruleum*,

β. *lanceolatum*. L. lanceolate, acute, slightly serrate, cuneate at base. Sic.

p. 246, after *Periploca græca*,

P. angustifolia. Stem erect. Branches somewhat twisting. L. obversely lineari-lanceolate. Corymbs axillary, on very short stalks. Anthers acuminate. **S.** 11–3. Islands on west of Sic.—Bert.

p. 361, after *Narcissus præcox*,

N. cupularis. Scape 2–6-flowered. Segm. of Cor. ovato-oblong, apiculate, *yellow*, three times as long as the entire, saffron crown. **p.** 4, 5. Lucca.—Bert.

p. 383, add to *Fimbristylis dichotoma*,

γ. *cioniana*. Stem and L. filiform. Pisa.—Bert.

p. 412, after *Dactylis glomerata*,

D. littoralis. "Stems creeping. Flowering-branches from the knots, nearly solitary, leafy to the top. L. rigid, in opposite rows. Pan. oblong, compact. Inner Glume not half as long as the spicule. Flts. 4–10. Outer Pale narrowed at the top, somewhat emarginate. **p.** 6–8."—Bert. *Clayey shores*. Mdt.

D. repens. "Stems creeping. Flowering-branches tufted from the knots, naked at top. L. rigid, in opposite rows. Pan. ovoid, compact. Inner Glume sometimes as long as the spicule. Outer Pale enlarged upwards, emarginate, mucronate. **p.** 7, 8. *Sic.*"—Bert. *I follow Bertoloni in admitting these as two species, but the numbers and leafiness of the flowering-branches vary much in the same plant.*

p. 413, *among* Festuca, *but I do not know exactly where it ought to be placed*—

F. depauperata. "Raceme quite simple. Rachis and stalks of Spicules jointed. Each stalk terminated by an ovate, compressed, awnless spicule. **p.** 5. *Pastures*. Sard."—Bert.

p. 417, after *Brachypodium tenellum*,

B. tuberculosum. "Spicules alternate. Outer Pale with 3 nerves, tubercled. **a.** 4, 5. Sard."—Bert., *as* Triticum.

p. 419, after *Triticum caninum*,

T. ligusticum. Hairless. Spicules 6-flowered, longer than the intervals between them. Glumes many-nerved. The outer Pale of the lower Floret of each spicule furnished with a long awn. **a.** 5. Genoa.—Bert.

Supply also the following deficiencies among the Genera :—

p. xxxix., after *Statice,*

678. **ARMERIA.** Differs from *Statice* in having the flowers in an involucrate head, with an inverted, cylindrical sheath.

p. xli., after *Lloydia,*

795*. **ALOE.** Petals united into a tube, nectariferous at the base. Capsules 3-celled. Seeds with a membranous margin, in two rows in each cell. *Roots bundled. Leaves rigid, fleshy.*

INDEX.

In order to enable the traveller to apply the information he may receive from the botanists of the country in which he may happen to be, and not spend his time in hunting after plants with which he is perfectly familiar under other names, I have inserted in this Index, in Italics, the synonyms of the Authors of the most generally received Floras of the countries within the limits of this work.

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ERRATA.

GENERA.

Page xxiv., **C.** *Fl. of* 1 *pet.*, &c. At end of line add Rubiaceæ. Stellatæ of Linn.

,, xxvii., for *Borrago*, read *Borago*.

,, lxxii., for *Centaureæ*, read *Centaurieæ*.

SPECIES.

Page 10, for *Pæoniaceæ*, read *Pæonieæ*.

,, 12, col. 1, line 6 from bottom, for *officinalis*, read *officinale*.

,, 20, heading, for 53, read 54.

,, 21, col. 1, for *Pettaria*, read *Peltaria*.

,, 21, col. 2, for *Nucumentaceæ*, read *Nucamentaceæ*.

,, 22, heading, for 64. Calepina, read 65. Bunias.

,, 23, col. 2, *dele* character of *Brassica insularis*, and insert from p. 428.

,, 38, col. 1, for *surrejanus*, read *surrejanum*.

,, 44, line 8, for 113, read 114.

,, 44, line 9, for 114–126, read 115–127.

,, 44, line 10, for 127, read 128.

,, 50, col. 1, for *fructicosa*, read *fruticosa*.

,, 81, col. 1, Sect. **B.** *L. ternate, except in O. oligophylla*, belongs to the character of the section, and not to that of the subdivision **i.**

,, 95, col. 2, at end of *Lotus hispidus*, *dele* ‘ Includes *L. parviflorus.*’

,, 101, col. 1, for *Astrolobium*, read *Arthrolobium*.

,, 107, col. 2, for *ensifolia*, read *ensifolius*.

,, 110, col. 2, the note after *Orobus sylvaticus* should follow Tribe V. Phaseoleæ.

,, 111, col. 2, for *Cocumilia*, read *Cocomilia*.

Page 60, col. 1, before *Malabaila*, insert Tribe XIV. Smyrneæ.

,, 160, col. 2, for *Ægomarathron*, read *Ægomarathrum*.

,, 175, col. 1, for *Hypochærideæ* and *Hypochæris*, read *Hypochœrideæ* and *Hypochœris*.

,, 202, col. 2, line 1, for *cristata*, read *crustata*.

,, 219, after *Serratula nudicaulis*, add—

S. cichoracea. Stem nearly simple, 1–2-flowered. L. rough, *hairless*, obovato-oblong, dentate, incise at the base. Phyll. oblong, terminating in a long, slender, spreading or recurved, spine-like cusp. **p.** 6. Tusc. Civ. Vecchia. Salerno. *Perhaps rather a* Carduus.

Page 225, col. 2, for *ochroleucus*, read *ochroleucum*.

,, 226, col. 1, for *heterophyllus*, read *heterophyllum*.

,, 240, col. 1, omit *Campanula Alpini*, which is *Adenophora suaveolens*.

,, 250, col. 2, for Ipomæa, read Ipomœa.

,, 252, col. 1, line 7 from bottom, for *nebrodensis*, read *nebrodense*.

,, 254, col. 1, for *arvensis*, read *arvense*.

,, 257, col. 2, for *Borrago*, read *Borago*.

,, 269, col. 2, for *Rhinanthaceæ*, read *Rhinantheæ*.

,, 271, col. 1, for Rhyncocoris, read Rhynchocorys.

,, 313, col. 1, omit *Chenopodium setigerum*, which is *Suæda setigera*.

,, 328, col. 1, for *tomasiniana*, read *tommasiniana*.

,, 380, col. 2, line 10, after *badius*, insert Guss.

,, 407, col. 1, line 1, for *Sclerocloa*, read *Sclerochloa*.

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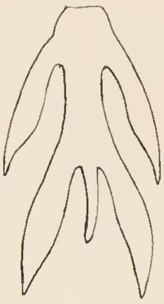

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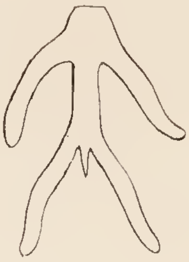

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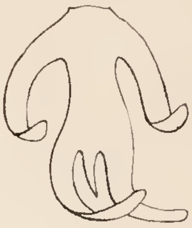

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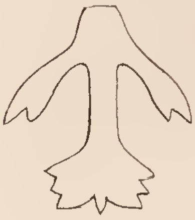

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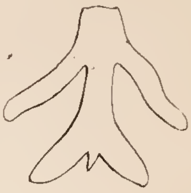

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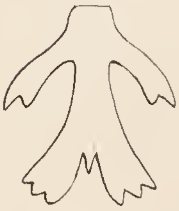

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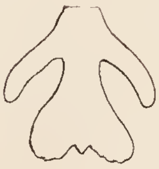

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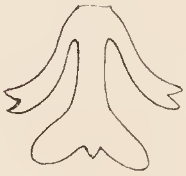

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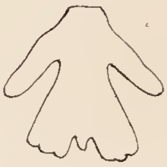

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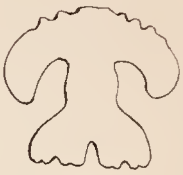

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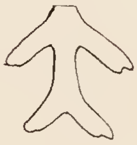

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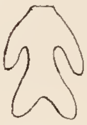

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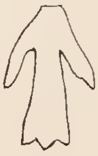

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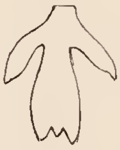

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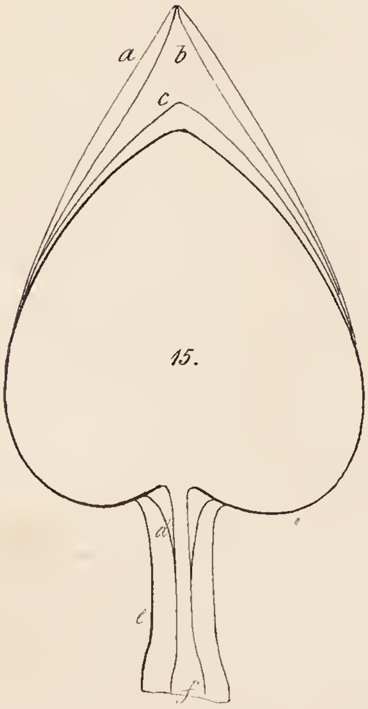

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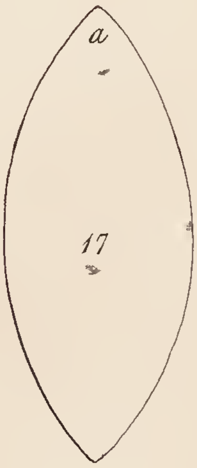

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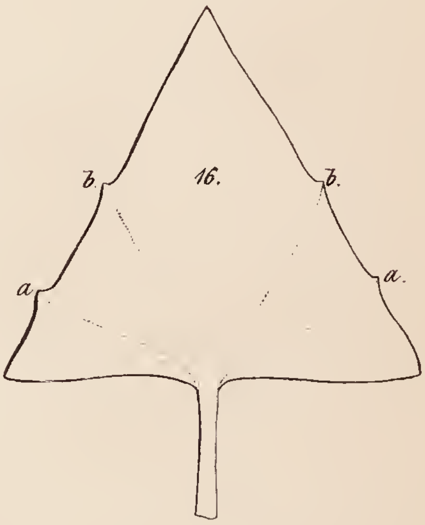

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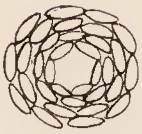

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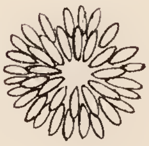

Fitch, lith.

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EXPLANATION OF PLATE.

Fig. 1. Label of *Orchis undulatifolia.*
Fig. 2. ,, *Orchis Simia.*
Fig. 3. ,, *Orchis macra*, from Eng. Bot.
Fig. 4. ,, *Orchis militaris.*
Fig. 5. ,, *Orchis galeata.*
Fig. 6. ,, *Orchis fusca.*
Fig. 7. ,, *Orchis fusca*, from Eng. Bot.
Fig. 8. ,, *Orchis variegata.*
Fig. 9. ,, *Orchis tenoreana.*
Fig. 10. ,, *Orchis longibracteata.*
Fig. 11. ,, *Orchis ustulata.*
Fig. 12. ,, *Orchis ustulata*, from Eng. Bot.
Fig. 13. From a plant found at Albano, which I at one time proposed to call *Orchis puella*, but, as I found only one specimen, not in a very good state, and that has since been destroyed by insects, I have not ventured to introduce it. In habit it resembled *O. ustulata*, but was larger, and, except in the form of the label, not at all allied to *O. globosa.*
Fig. 14. Label of *Orchis globosa.*
Fig. 15. A cordate leaf: *a*, cordate-prolonged; *b*, cordate-acuminate; *c*, cordate-acute; *d*, (inner line) cordate-attenuate; *e*, spatulato-cordate; *f* indicates the stalk of a simply cordate leaf.
Fig. 16. A triangular leaf. Reduced to *a a*, it becomes deltoid; to *b b*, rhombic.
Fig. 17. A form terminating at each end in a mathematical right angle.
Fig. 18. Compressed seeds.
Fig. 19. Obcompressed seeds.

May, 1850.

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